University of Alberta

Children with Movement Difficulties Perceive Teachers to Treat Students in Physical Education Differently According To Skill Level

by

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Abstract

The purpose of the study was to investigate whether children with movement difficulties perceive that physical education teachers treat students differently according to skill levels. According to the Teacher Expectancy Model, understanding children's perceptions and attributions for teacher treatment can influence performance in physical education through the Pygmalion effect. Eight children with movement difficulties in Grades 3 to 6 completed three versions of the Teacher Treatment Inventory (each targeting treatment of either highly skilled children, poorly skilled children, and self). The results indicated that participants perceived teachers to treat poorly and highly skilled children differently. Surprisingly, they did not perceive themselves to be treated similarly to poorly skilled children. This may have been influenced by the criteria participants used to determine skill levels. Specifically, findings of the interviews revealed that participants not only considered normative ability to determine children's skill levels, but also effort and behaviour during physical education.

Dedication

To my Nonna, Maria Terragni, and

Nonno, Luigi Terragni, you are always in my heart.

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Chapter 1

Introduction

The purpose of the study was to investigate the perceptions of children with movement difficulties with regard to how their teachers treat children of different skills levels in physical education, as well as their attributions for this treatment. According to the Teacher Expectancy Model proposed by Martinek (1989, 1991) differential treatment toward children of different skill levels is an expression of the performance or achievement teachers expect the children to demonstrate in physical education. He referred to the communication of these expectations through behaviour as the *expectancy effect*. Martinek suggested that the expectancy effect in physical education creates the potential for the Pygmalion effect, such that children respond to their teachers' behaviours in a manner that fulfills the teachers' expectations. Specifically Martinek proposes that children who receive preferential treatment from their teachers, because their teachers expect them to be high achievers in physical education, will meet these expectations and perform well. Conversely, children who teachers consider to be low achievers in physical education will consequently receive undesirable teacher treatment and subsequently perform poorly in physical education classes (Martinek, 1981b, 1989).

According to the Teacher Expectancy Model proposed by Martinek (1989, 1991), understanding children's perceptions of teacher treatment, and their attributions for the treatment is crucial. Martinek (1989, 1991) suggests that children's performance in physical education classes may be influenced if the differential treatment they perceive affects their motivation to learn (Weinstein, 1989). The model suggests that this will occur if children explain or attribute the treatment they receive from their physical

education teacher to their ability (Martinek, 1989, 1991). Research has shown that attributions for perceived teacher treatment to ability influences children's perceived competence, thereby influencing their motivation to learn and performance in physical education (Brophy & Good, 1974; Ferrer-Caja & Weiss, 2000; Good & Brophy, 1994; Nicholls, 1989; Papaioannou, 1995; Weinstein, 1989; Weinstein, Marshall, Sharp & Botkin, 1987). A detailed discussion of the Teacher Expectancy Model proposed by Martinek (1989, 1991) is provided in Chapter 2.

Given that children's performance in physical education classes may be influenced by (a) perceptions that their teachers treat students differentially in physical education, and (b) attributions for the differential treatment to ability, three questions need to be asked to determine whether support exists for the application of the Teacher Expectancy Model to physical education. First, do children perceive that teachers treat students differentially during physical education, according to their skill levels? Although there is evidence that teachers treat individual students differently from each other during physical education classes (Martinek 1981a, 1988; Martinek & Johnson, 1979; Martinek & Karper, 1984, 1986; Portman, 1995), research investigating whether children actually perceive this differential treatment in physical education classes is limited (Martinek, 1989). Second, how do children perceive they are treated (in comparison to other students) by their physical education teachers? To date, there is little research investigating how children feel they are treated in physical education classes. Third, what attributions do children make for the treatment they perceive that teachers direct towards them and others? Only a limited amount of research investigating this issue is available.

The study attempted to answer these questions from the perspective of children with movement difficulties. Children with movement difficulties were the focus of the study because it is felt that their perceptions of, and attributions for, the treatment they perceive is likely to negatively influence their performance in physical education class. It was expected that because children with movement difficulties are, by definition, poorly skilled, they would perceive the treatment they receive from physical education teachers to be similar to their perception of teacher treatment toward other poorly skilled children. Moreover, it was expected that they would attribute this treatment to their poor ability. As a consequence, the teacher expectancy model (Martinek, 1989, 1991) would suggest that the motivation and performances of children with movement difficulties may be negatively influenced by their teachers' behaviours. Recommendations would follow in an attempt to alleviate the potential negative effects on performance or learning in physical education (Good & Brophy, 1970; Cheffers, 1977; Cheffers & Mancini, 1978; Martinek, 1981, 1989, 1991; Martinek, Crowe & Rejeski, 1982).

The investigation of the teacher expectancy model in the context of with children with movement difficulties in physical education is described in Chapter 3. The results, described in Chapter 4, provide insight into the perceptions of, and attributions for, teachers' behaviours by children with movement difficulties. Some of the results supported the hypotheses based in the model, while others were quite surprising. The discussion in Chapter 5, attempts to explain these results. It is suggested that the participants' perceptions of their own skill levels, and their perceptions of what it means to be skilled, influenced some of the more unexpected findings.

Delimitations

The study was delimited to children in Grades 3 to 6. This was done for three reasons. First, previous research has shown that teachers express differential behaviours toward students in Grades 3 to 6 (DeVoe, 1991; Martinek, 1981a, 1988; Martinek & Johnson, 1979; Martinek & Karper, 1984, 1986; Mitman, 1985; Portman, 1995; Silberman, 1969, 1971). Second, the coding scheme for the attribution responses used in this study was based on the assumption that children understand the meanings of effort and ability. A mature understanding of the relationship between effort and ability in sport does not occur prior to Grade 3 (Fry & Duda, 1997). Third, the literature suggests that the potential for differential teacher treatment to influence children's achievement is greater in children in this age group than in younger children (Weinstein et al., 1987).

A second delimitation was the inclusion of only those children with movement difficulties who were regular participants of regular physical education classes (i.e., non-segregated or adapted) at school, without the support of a teacher's aide. The term regular participants refer to children who attended physical education classes except for extraneous circumstances such as illness or vacation. Participants attended regular schools to prevent the type of school from being a confounding variable.

A third delimitation is that only children whose movement difficulties were not associated with cognitive delays were included in the study. This means that only children with developmental coordination disorder, or children with movement difficulties as well as learning disabilities, attention deficit hyperactivity disorder, mild cerebral palsy, Asperger's syndrome or muscular dystrophy were considered potential participants. Children living with intellectual impairments, moderate/severe cerebral

palsy, moderate/severe autism, Down's syndrome or fetal alcohol syndrome were not considered due to the possibility that delays in cognitive development might affect their understanding of the concepts of effort and ability, and the questions included in the inventories.

Limitations

A limitation of this study was the assumption that the participants could accurately report their perceptions of teacher treatment. Related to this, some may suggest that a second limitation is that children's perceptions of their teachers' behaviours were not verified through observations of physical education classes. However, this was not viewed as a limitation because it was recognised that children's performances are influenced by their perceptions. Therefore, it was participant's perceptions of teacher treatment that were important, and not actual teacher treatment.

A third limitation is that children were asked specifically about their teachers' behaviours in physical education classes. Considering that children may have the same teacher for all their subjects throughout the day, it may have been difficult for them to separate the treatment they receive from this teacher in physical education from the treatment they receive in other subject areas (Martinek, 1988). To increase the likelihood that participants were thinking about physical education classes when responding to the inventories and interview questions, children were asked to describe activities in physical education class prior to beginning the inventories.

Definitions

Ability refers to a stable trait that the child is unlikely to drastically change with practice. This is different from a *skill*, which can be fairly easily modified with practice (Schmidt & Lee, 1999).

Highly skilled target child and *poorly skilled target child* are children who are perceived by the participant to demonstrate either high athletic ability or poor athletic ability (respectively), in physical education.

Teacher refers to the individual who instructs the child's physical education class. Whether or not this individual is a physical education specialist will not be determined in this study. Conversely, a *physical educator* is a teacher who has received a degree in physical education (Behets, 1996). No distinction was made to whether individuals with a physical education degree had training in education or not.

Physical achievement or *achievement* refers to the degree of success a student demonstrates in performing the games, activities and drills in physical education class. *Expected physical achievement* is used to mean the inferences that a teacher makes about the present or future success expected of students' performance in games, activities and drills in physical education class (Martinek & Johnson, 1979).

Chapter 2

Review of the Literature

Research in sport pedagogy pertaining to teaching in physical education is a fairly new area that appeared in literature near the beginning of the seventies (Pieron, 1996; Silverman, 1991). A research review by Silverman (1991) that included studies related to teaching in physical education published over the 15 years prior to the date of his article showed that teacher effectiveness has been the main focus of the research conducted. A small amount of this research has examined the behaviours teachers direct toward students perceived to be low and high achievers—although it appears that the majority of this research has been conducted by one individual, Thomas J. Martinek (Martinek, 1981a, 1988, Martinek & Mancini, 1979; Martinek & Johnson, 1979; Martinek & Karper, 1984, 1986). Martinek (1989, 1991) developed a model, called the Teacher Expectancy Model, to explain how teachers may influence students' motivation and achievements in physical education through behaviours that communicate their expectations for students' performance (see Figure 1). The model suggests that Pygmalion is likely to occur in physical education classes when differential performance expectations communicated by teachers through various behaviours are perceived and internalised by students (see also Martinek et al., 1982). Specifically, the Teacher Expectancy Model proposes that:

> (1) teachers form expectations about their students from perceptions made through a number of impression cues related to either teacher and/or student characteristics, (2) from these perceptions, certain teacher expectations for the future performance of the student are formed; (3) expectations affect both the quantity and quality of the interactions between teachers and students; and (4)

the student perceives and interprets the interactions and may or may not perform in a way that is consistent with the original expectations. (Martinek, 1989, p. 318)

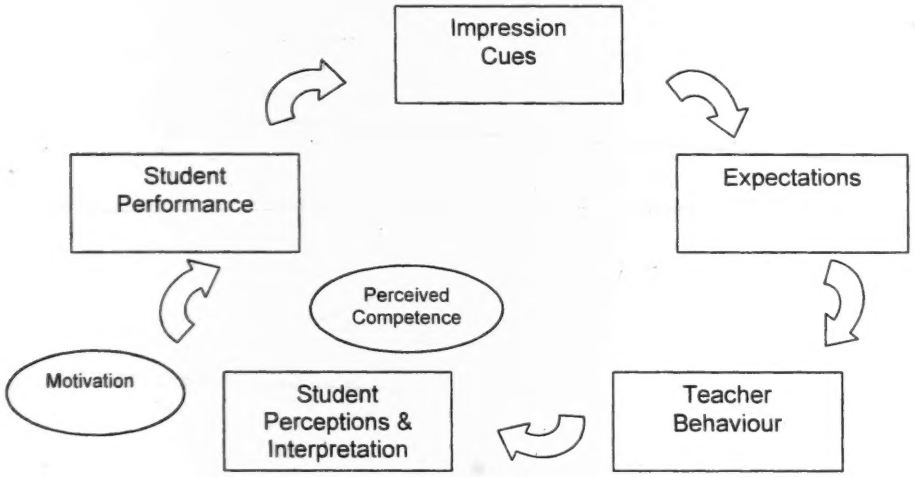

Figure 1. Teacher Expectancy Model proposed by Martinek (1991).

The Teacher Expectancy Model will be the focus of the discussion in this chapter, along with related research and implications for low achieving students in physical education.

Teachers' Impressions and Expectations

Research evidence supports the existence of the expectancy effect in physical education teachers, through findings that teachers form expectations about children's physical achievement and express these expectations through their behaviours (Martinek, 1981a, 1988; Martinek & Johnson, 1979; Martinek & Karper, 1984, 1986). Teachers' expectations for their students' achievements are formed from impression cues and attributions they make while interacting with their students (Martinek et al., 1982).

According to Triandis (1970, as cited in Siperstein & Bak, 1986), a teacher's impression of a student in any class is influenced by a combination of the student's characteristics, the teacher's attributes, and the situation. More specifically, the student's physical appearance and behaviour, the teacher's values and knowledge about the student, and social norms can all influence a teacher's expectations for student achievement (Siperstein & Bak, 1986).

Student characteristics that have been related to elementary school teachers' expectations for students' performances and achievements include attractiveness, gender, and perceived levels of effort and participation. For example, two studies by Martinek (1981a) and his colleague (Martinek & Karper, 1984) illustrated the link between physical attractiveness and teacher performance expectancies. The first study (Martinek, 1981a) included two physical educators and 100 students from Grades 2, 4 and 6, while the second study (Martinek & Karper, 1984) included three physical educators and 128 students from Kindergarten and Grades 1 to 3. The procedures for both studies were similar in that teachers were asked to rate their students according to their expectations for: (1) performance of physical skills, (2) social relations with peers in physical education class, (3) co-operative behaviour in physical education class, and (4) ability to reason in physical education class. The ratings ranged from 1 (*very low expectations*) to 7 (*very high expectations*). In addition, graduate students subjectively rated each participant (from pictures) on a physical attractiveness scale ranging from 1 (*highly unattractive*) to 5 (*highly attractive*). Children's physical attractiveness was rated by graduate students (rather than teachers) to prevent teachers from deducing the purpose of the study, and to ensure that ratings of physical appearance were not confounded by nonphysical

characteristics of the children. The findings of the first study (Martinek, 1981a) indicated that for students in Grades 2, 4, and 6, a significant positive relationship was found between physical attractiveness ratings and teacher expectations for the demonstration of physical skills and social relations in physical education. Similarly, the second study (Martinek & Karper, 1984) showed that physical educators had a tendency to relate higher expectations of co-operative behaviours and positive peer relations in physical education class for children in Kindergarten through Grade 3 who were perceived as more physically attractive than those perceived as less attractive. Although the results of this latter study were not statistically significant, the potential role of physical attractiveness as an impression cue cannot be ignored. The results suggest that physical attractiveness does influence physical educators' expectations for students' behaviours in physical education.

The study by Martinek and Karper (1984) also investigated whether teachers' perceptions of the amount of effort students demonstrated also acted as an impression cue. Perceptions of effort exerted by students was measured by asking teachers to rate how often they felt each child "tried hard" on a 5-point scale ranging from 1 (*never*) to 5 (*always*). Again, children who were perceived to try hard more frequently (or consistently) were expected to be more co-operative and demonstrate better social relations in physical education class than those who teachers perceived to try hard less often.

Expectancy effects in physical education also appear to be related to student gender and perceived level of participation. For instance. Dunbar and O'Sullivan (1986) videotaped 18 physical education lessons taught by a Grade 1 teacher to 22 students (11

boys and 11 girls), and 15 lessons taught by a Grade 2 teacher to 21 students (9 boys and 12 girls). The videotapes were then analyzed for the quantity and quality of feedback, the number of questions asked, and the number of motor skill demonstrations requested from each student. Within each class, the total numbers of questions asked, demonstrations requested, and types of feedback provided were compared by gender. The authors reported that teachers demonstrated different behaviours towards boys than girls. Similarly, DeVoe (1991) reported differential teacher behaviours toward boys and girls in a study of the observed behaviours of six physical educators towards each of the 310 students in Grade 4. In addition, teachers' perceptions of boys' participation levels were found to differ from their perceptions of girls' participation levels. These findings of both Dunbar and O'Sullivan (1986) and DeVoe (1991) will be discussed more extensively later in this review.

Most of the research thus far has focused more extensively on student attributes as impression cues rather than teacher attributes or situational cues. However, a study by Martinek and Johnson (1979) suggested that the gender of elementary school teachers did not influence their expectations of students' achievement in physical education lessons. In addition, a study by Martinek and Karper (1986) investigated whether the instructional setting affected teachers' expectations of high and low ability students. Three graduate students who were physical educators with 2 to 4 years of teaching experience instructed physical education classes in a laboratory program over 24 weeks. One hundred and twenty six children in Kindergarten to Grade 3 were randomly assigned to each class. The program was divided into three 8-week phases, each of which implemented a different instructional setting. The first was an individualized setting that focused on

individual self-improvement through individual practice. The second was a competitive setting that focused on winning team games, and the third used a co-operative game approach that emphasised working as a unit and helping others. Students' motor abilities were assessed using the Body Coordination Test (Schillings & Kiphard, 1976, as cited in Martinek & Karper, 1986) prior to the start of the study and again after completing each phase. The scores calculated from the end of the individual phase served as the initial score for the competitive phase, while the score from the end of the competitive phase became the initial score for the co-operative phase. Mean gain scores were calculated by calculating difference scores from the Body Coordination Test scores from the beginning and end of each of the three phases and dividing the difference score by two. Students were classified as having high or low motor ability for each phase if they scored above the 75^{th} or below the 25^{th} percentile on the test respectively. Graduate students' expectations in physical education were assessed using the same method employed by Martinek and Karper (1984), by asking them to rate each student on expected performance of physical skills, social relations with peers, co-operative behaviours and ability to reason. Results showed teachers' expectations of students' ability to reason in physical education were related to student motor ability and the instructional setting. Under the individualised approach, high ability students were expected to demonstrate a significantly higher ability to reason than low ability students. Conversely, low ability students were expected to show significantly better reasoning ability in the co-operative approach than high ability students. No significant differences were obtained in the competitive setting. The authors suggested that teachers expected low ability students to

reason better in a co-operative setting than an individualized setting because there is a greater emphasis on social interaction in a co-operative setting.

The Impact of Expectancies on Teacher Behaviours

Given that there is evidence confirming the relationship between teachers' impressions of students and their subsequent performance expectations, the next question to ask is whether or not these expectations are expressed through the teachers' behaviours, thereby creating the "expectancy effect" (Martinek, 1989, p. 318). Research studying the expectancy effect confirms that teachers' expectations are expressed through their behaviours in both the classroom and gymnasium (Brophy & Good, 1973; Evertson et al. 1973, as cited in Brophy & Good, 1974; Martinek, 1981a; 1988; Martinek & Johnson, 1979; Martinek & Karper, 1984; Mitman, 1985; Portman, 1995; Silberman, 1969, 1971). Evidence confirming the presence of the expectancy effect in the classroom will be discussed first to establish why it was felt that differential teacher behaviour is expected to occur in the context of the gymnasium. Following, evidence confirming the expectancy effect in the gymnasium will be presented along with a theoretical explanation for it.

Expectancy effect in the classroom. Teachers interact with students throughout the day and education research has shown that the nature of these interactions is not equal among students, but instead differs according to expected achievement (Good & Brophy, 1972; Evertson et al., 1973, as cited in Brophy & Good, 1974; Mitman, 1985). Teachers have been shown to behave differently toward individual students in terms of the frequency of interactions, the amount and quality of feedback (Evertson et al., 1973, as cited in Brophy & Good, 1974; Good & Brophy, 1972; Mitman, 1985), and their

acceptance of students' ideas, responses to requests for help, and responses to questions (Evertson et al., 1973, as cited in Brophy & Good, 1974; Good & Brophy, 1972; Silberman, 1969, 1971). One of the first studies looking at the expectancy effect was conducted by Good and Brophy (1972). In this study, the interactions between nine Grade 1 teachers and 270 of their students were recorded using the Brophy-Good Dyadic Interaction Observation System (Brophy & Good, 1970). In total, 16 2.5-hour observation sessions were conducted in each of the nine classrooms. Teachers were asked to rank their students according to the achievement level they expected. Results showed that children ranked in the top of their class for achievement received significantly more praise and less criticism than peers when the teacher initiated the interaction. These students also initiated significantly more private work related interactions with their teachers, voluntarily responded to questions more often, and provided more correct and fewer incorrect answers than their classmates (Brophy & Good, 1974; Good & Brophy, 1972).

Another study by Evertson et al. (1973; as cited in Brophy & Good, 1974) involving six teachers in Grade 2 found that students tended to receive more reading turns if they were considered to be high achievers than those considered to be low achievers. As well, teachers responded to incorrect answers by merely repeating the question (rather than offering the student help) significantly more often to students expected to be low achievers than students expected to be high achievers.

Mitman (1985) found similar results in a more recent study of 12 Grade 3 teachers. Children were identified as high and low achievers either by having their teachers rank students on achievement or by their reading subscale score on a shortened

version of the Metropolitan Achievement Test, Form F (Durost, Bixler, Wrightstone, Prescott & Balow, 1970; as cited in Mitman, 1985). Data collected using a modified version of the Brophy and Evertson (1976) observation system (as cited in Mitman, 1985) over four observational periods showed that teachers provided high achievers with significantly more teacher-initiated interactions, reading turns, and correct answers than were provided to low achievers. In contrast, low achievers were the recipients of more academic criticism and a greater proportion of behavioural reprimands ($p < .05$). Whereas teachers responded to interactions initiated by high achievers about work with praise and feedback, low achieving students received more criticism.

When the research is considered collectively, it becomes clear that teachers tend to give preferred treatment in the classroom to those children they expect to be high achievers. Teachers encourage these children by praising their attempts more often (Good & Brophy, 1972), especially when they approach the teacher on their own (Mitman, 1985). These children also receive criticism less frequently than lower expectancy peers (Good & Brophy, 1972). Teachers provide high expectancy achievers with more learning opportunities, as illustrated in studies by both Good and Brophy (1972) and Mitman (1985) that showed high expectancy children to receive more reading turns and more attention from their teachers. Conversely, children expected to be low achievers received more undesirable teacher behaviours. They were criticised more frequently and received little encouragement to initiate an interaction with teachers. When they did initiate interactions with teachers, they were more likely to receive a negative teacher response in return (Mitman, 1985). Although low expectancy children answered incorrectly more

often than their peers (Good & Brophy, 1972), they received little help from teachers to correct their responses (Mitman, 1985).

Expectancy effect in the gymnasium. Research has shown that the expectancy effect occurs not only in the classroom, but also within elementary physical education classes taught by general education teachers. Studies by Martinek (1981a) and Martinek and Karper (1984) revealed that children perceived to be more physically attractive were expected to demonstrate better social relations in physical education. Further, children perceived to be more attractive were expected to demonstrate a higher level of physical skill (Martinek, 1981a), and were expected to behave more co-operatively in physical education (Martinek & Karper, 1984). These studies determined whether or not these expectations were associated with differential teacher behaviours by recording teacher behaviours, assessed using a version of the modified Cheffers Adaptation to Flanders Interaction Analysis System (CAFIAS; Martinek & Mancini, 1979). Martinek's results showed that highly attractive Grade 6 students were expected to demonstrate significantly higher social relations and physical skill, and received greater acceptance by teachers (as indicated by behaviours showing that teachers developed the ideas of these students and acknowledged their feelings) (Martinek & Mancini, 1979). Martinek and Karper reported that students in Kindergarten and Grade 1 who were expected to demonstrate significantly better social relations and more co-operative behaviours received significantly more praise, criticism, and teacher direction than other students, which was interpreted as reflecting teachers' higher expectations of them. Students in Grades 2 and 3 who were rated as more co-operative received more acceptance of ideas and direction

from teachers than did their peers ($p < .0001$). As well, the students rated as being co-operative initiated a significantly greater number of interactions with their teachers.

Portman (1995) provided further evidence that teachers are more likely to help high achieving students in a qualitative study involving 13 students in Grade 6. The students were selected for the study because teachers had identified them as having poor motor skills, and because they had placed in the lower 25th percentile on skill tests. They were interviewed about their experiences in physical education, during which the participants stated that they felt they received inadequate help from their teacher. These perceptions were confirmed by field observations that these students with poor motor skills received little help from their teacher.

Preferential treatment towards high achievers in physical education was also illustrated in a study by Martinek and Johnson (1979). This study included five physical educators and 10 students in Grades 4 and 5 who were expected to demonstrate high or low achievement. Dyadic interactions were observed using a version of the CAFIAS adapted by Martinek (1977; as cited in Martinek & Johnson, 1979). Results suggested that physical educators rewarded high achievers with significantly more encouragement and acceptance of ideas. Physical educators also asked high achievers more analytical questions than low achievers ($p < .05$), thereby inferring that high achievers were expected to have higher levels of intelligence.

As mentioned previously, physical education teachers can form expectations based on students' gender (DeVoe, 1991; Dunbar & O'Sullivan, 1986). Dunbar and O'Sullivan (1986) reported that female students in Grades 1 and 2 received less positive and corrective feedback than male students in physical education class. DeVoe (1991)

also showed that male elementary students received more directions and criticisms from physical educators than female peers ($p < .05$). Overall, the behaviours expressed towards males in both studies suggest that physical educators expected a higher level of achievement from males than their female peers in physical education class.

Generally, the results from studies in physical education are in agreement with findings of studies in the classroom. To review, children whom teachers expect high physical achievement from tend to receive more encouragement through praise (Martinek & Johnson, 1979; Martinek & Karper, 1984) and less criticism (Martinek & Karper, 1984) than low achievers. They also receive more help (Martinek, 1981a, Martinek & Johnson, 1979; Martinek & Karper, 1984; Portman, 1995) than children expected to be low achievers. Conversely, children expected to be low achievers tend to receive more unpreferential teacher treatment: more criticism (Martinek & Karper, 1984), less help (Martinek & Johnson, 1979; Martinek & Karper, 1984; Portman, 1995), and less encouragement through praise (Martinek & Johnson, 1979; Martinek & Karper, 1984).

It may be argued that the different treatment teachers show children in both the classroom and the gymnasium is justifiable, or in response to the children's performance. For some behaviours, especially behaviours directed towards high achievers, this may be true (Nicholls, 1989). High achievers answer correctly more often, and can be expected to receive more praise and less criticism than low achievers (Good & Brophy, 1972; Martinek & Johnson, 1979; Martinek & Karper, 1984). However, some behaviours directed towards low achievers do not appear reasonable and even appear to contradict expectations of how a child struggling in school should be treated (Nicholls, 1989). These behaviours include providing low achievers with little help in both the classroom

(Mitman, 1985) and in physical education (Martinek & Johnson, 1979; Martinek & Karper, 1984; Portman, 1995).

The Pygmalion Effect

Although there is evidence that the expectancy effect exists in physical education classes (Martinek, 1981a; Martinek & Johnson, 1979; Martinek & Karper, 1984; Portman, 1995), little research has investigated whether or not it may impact children's performances and achievement. In other words, there is little evidence available to indicate whether the preferential treatment shown to some students, and the unpreferential treatment shown to others, influences students' performances in physical education in ways that confirm and reinforce teachers' expectations. Martinek (1989) proposed that in order for differential teacher treatment to influence children's performances, children must first perceive that teachers treat students differently according to their ability level. Most of the research investigating whether or not children perceive differential teacher behaviours toward high and low expectancy performers has been conducted in the classroom.

Perceptions of differential treatment in the classroom. Evidence supporting children's perceptions of differential teacher behaviours towards high and low achievers in the classroom has been obtained from studies conducted by Weinstein and her colleagues. For instance, in an early study by Weinstein and Middlestadt (1979), 102 children in Grades 1 to 6 who attended a summer enrichment class were asked to complete one of two randomly assigned versions of an inventory that included 60 items describing teacher behaviours (Weinstein & Middlestadt, 1979). One version of the inventory asked students which of the sixty behaviours their teacher was likely to present

to a hypothetical low achieving male. The other version of the inventory asked students which behaviours would be presented to a high achieving male if he attended their class. The results showed that children predicted their classroom teacher would treat high and low achievers differently. Specifically, the hypothetical high achiever was significantly more often perceived to receive special privileges and work related opportunities than the hypothetical low achiever. The special privileges included freedom to create projects, and to choose any activity as long as the work was completed. In addition, high achievers were significantly more often seen to receive work and rule orientations than low achievers, including the provision of time to respond when called upon by the teacher, and questions that required factual answers. Conversely, the hypothetical low achiever was less frequently reported to receive academic chances from the teacher, and more often received behaviours expressing the teachers' concern for that individual. The low achiever was less frequently expected to complete his work, was less often provided with individual instruction, and was more frequently watched closely by the teacher when while completing work ($p < .05$). The results from this study were used to create the original version of the Teacher Treatment Inventory (TTI) used by Weinstein et al. (1982).

A subsequent study by Weinstein et al. (1982) took a more in-depth look at the perceptions of teacher treatment towards four hypothetical students by 234 children in Grades 4 to 6 from eight traditional and eight open classes. Open classes were defined as classrooms in which students play a greater role in decision making and learn at their own pace. They are given more activity choices, and evaluation is based more on individual progress than social comparison. Conversely, all children in traditional

classrooms generally learn the same material at the same time and pace (Weinstein, 1989). Two of the four hypothetical students (one boy and one girl) were described as high achievers, while the others (one boy and one girl) were described as low achievers. Perceptions of teacher treatment were assessed using the TTI (Weinstein et al. 1982), which asked them to rate how often they expected their teacher to demonstrate 44 specific behaviours toward the hypothetical target students on a scale ranging from 1 (*always*) to 4 (*never*). Participants were randomly assigned to complete the TTI with only one of the four hypothetical students in mind (Weinstein et al., 1982). Factor analysis of the resulting data lead to the identification of four teacher behaviour factors labelled: (a) supportive help, (b) negative feedback and direction, (c) work and rule orientation, and (d) high expectation, opportunity and choice. Findings were then discussed in terms of these four factors (or subscales).

The hypothetical target children described as low achievers were perceived to receive significantly more negative feedback and direction, and more work and rule orientation behaviours from teachers. In contrast, hypothetical high achievers were expected to receive significantly more teacher behaviours that reflected higher expectations of them, and to be provided with more academic opportunities and choice. The results were compared in terms of the gender and achievement levels of the participants, the gender of the hypothetical students, and classroom types (open or traditional). Achievement levels of participants were assessed using the previous year's scores on a comprehensive test of reading. Weinstein et al. (1982) reported that participant's perceptions of teacher treatment differed toward low and high achievers but

were not significantly related to the hypothetical target student's gender, the participant's gender, the participant's achievement level, or classroom type.

The studies by Weinstein and Middlestadt (1979) and Weinstein et al. (1982) clearly suggest that children perceive the expectancy effect in the classroom. The issues that need to be addressed now are whether differential teacher treatment is related to (a) children's expectations of their own academic achievement, and (b) children's academic achievement (Weinstein, 1989). In other words, do children use the treatment they perceive from teachers as cues about their (i.e., the children's) abilities? Brattesani et al. (1984) provided insight into these questions. They hypothesized that: (a) if children use teacher behaviours as cues indicating their own ability, the differential treatment they perceive should be related to their own expectations of academic achievement; and (b) if children respond to the teacher treatment they perceive in the manner predicted by the Pygmalion effect, their achievement should closely reflect their teachers' expectations.

Brattesani et al. identified classrooms where differential teacher treatment was perceived to be highly and scarcely present. To do this, they asked 101 children in Grades 3 to 5 to complete Weinstein et al's (1982) TTI with either a hypothetical low or high achiever in mind. For each classroom, the mean scale scores for the hypothetical high and low achievers were calculated. Absolute values of difference scores calculated between the mean scores for high and low achievers were then summed across the three subscales for each class. The summed scores for each class were then ranked within grade and a median split procedure resulted in the identification of five low and five high differential treatment classrooms. For each of these 7 classrooms, Brattesani et al. (1984) obtained measures of (a) teacher expectations for each student's achievement, (b) each student's

expectations for their own achievement, and (c) each student's actual achievement. Students were classified as high or low teacher expectancy students based on teacher rankings of expected year-end reading achievement in relation to the class median in expected reading performance (i.e., above or below the median). Students' expectations of their own reading achievement were measured using Nicholl's (1976) Self-Competence Scale (as cited in Brattesani et al., 1984). Student achievement was measured using achievement gains in reading, calculated using differences between previous and current years scores from a comprehensive test of reading.

Results showed that in classes where differential teacher treatment of high and low achievers was highly prevalent, students' perceptions of treatment they received were related to teachers' expectations. In other words, the treatment students' thought they received was similar to the behaviours they predicted teachers to show high achievers and low achievers. Students receiving high expectancy rankings or achievement scores perceived significantly higher teacher expectations. Children who scored low on either the achievement test or teacher expectancy ranking perceived significantly more negative feedback and direction, and children who scored poorly only on the achievement test perceived significantly more work and rule orientated behaviours. Further, in classrooms where teacher behaviour towards high achievers and low achievers was highly differentiated, students' expectations of their own reading achievement were more strongly related to teacher expectations than in low differential treatment classrooms. One suggestion for the positive relationship between student expectations of reading achievement and teacher expectations of the students' ability is that children are interpreting the teacher behaviours as cues about their ability.

Brattesani et al. (1984) went on to determine if teachers' expectations of students' achievement in reading were related to the students' reading achievement throughout the year. Recall Brattesani et al. hypothesized that students' reading achievement would be influenced by perceived teacher treatment if it was interpreted as indicative of their reading abilities. Therefore, they predicted that teachers' expectations would correlate highly with students' achievements in classrooms where teacher treatment was highly differentiated. The results supported this prediction. A significant difference was found in the relationship between student reading achievement and teacher expectations in classrooms with high differential treatment than low differential treatment. In low differential teacher behaviour classes, reading achievement gains over the year were similar for high and low achievers and student achievement was not related to teacher expectation. In contrast, in classrooms identified as having highly differential teacher treatment, children which teachers held high expectations for had higher reading achievement gains than those children that teachers held low expectations for. One possible explanation for these relationships is that children use teacher behaviour as information about their own reading ability and are influenced accordingly in classrooms where teachers are perceived as treating children differently according to expected reading achievement. Of course, because results are correlational, the possibility that the behaviours teachers elicited were in response to student achievement cannot be dismissed (Weinstein, 1989).

The studies up to this point have focused on children in Grades 3 to 6. Children in this grade range appear to perceive and interpret differential teacher behaviours (Brattesani et al., 1984; Weinstein et al., 1982; Weinstein & Middlestadt, 1979).

Weinstein et al. (1987) extended the study by Brattesani et al. (1984) to investigate whether younger and older elementary children perceive and interpret differential teacher behaviours similarly. In the study by Weinstein et al., 579 children in Grades 1, 3 and 5 were asked to complete the Teacher Treatment Inventory. Again, results mirrored those reported by Weinstein et al. (1982); all children perceived their teachers as treating hypothetical high and low achieving children differently. Children perceived low achievers to receive more negative feedback and direction and less expectations, opportunities and choice than high achievers.

Weinstein et al. (1987) went on to investigate if children's age was related to: (a) whether the perceptions of teacher behaviours they personally received complimented teachers' expectations for them, and (b) whether their reading expectations were reflective of teachers' expectations for their reading performance. Children's perceptions of the teacher treatment they received were measured using a revised version of the Teacher Treatment Inventory. Procedures for measuring student and teacher expectations were similar to those described previously (Brattesani et al., 1984). Expected success in reading was measured by asking students to rank how well they expect to do compared to classmates using Nicholls Self-Competence of Attainment Scale. Teachers' expectations for student success were determined by asking teachers to rank students according to expected performance at the end of the year in reading. Results were compared between high and low differential teacher treatment classes. In short, Weinstein et al. showed that regardless of the degree of perceived differential teacher treatment in the class, children in Grade 1 had a tendency to perceive more positive teacher behaviours than children in Grade 5. Further, a two-way (grade, type of classroom) ANOVA of correlations between

teacher and student expectations in reading was conducted to assess the relationship between student and teacher expectations for future reading achievement. The results showed that in classrooms identified as being high teacher treatment differentiated classes, the relationship between teacher and student reading achievement expectancies for children in Grade 5 was significantly greater than for children in Grade 1. This may indicate that younger children were less likely to perceive and be influenced by (i.e., adopt) their teacher's expectations than older children, and so are somewhat more protected from the self-prophetic affects of differential teacher treatment than older children (Weinstein et al., 1987). The fact older children's expectations were more closely parallel to their teachers' expectations, and that reading achievement was positively related to teachers' expectations, suggests that older children's expectations are influenced by teachers' expectations. This in turn, may affect their performance in the classroom.

It should be noted that the results from the four studies by Weinstein and colleagues (Brattesani et al., 1984; Weinstein & Middlestadt, 1979; Weinstein et al., 1982, 1987) should be interpreted with caution. In each of these studies, participants were asked to complete only one version of the TTI inventory, either for the high or low achiever. Therefore, differences in each child's perceptions of treatment shown to high and low achievers were not assessed. The present study addresses this limitation. The study compares the treatment children with movement difficulties perceive they, a highly skilled target child, and poorly skilled target child receive from their teacher in physical education class by asking children complete three versions the Teacher Treatment Inventory (Weinstein et al., 1982) used above.

Perceptions of differential treatment in physical education. What should be clear is that research investigating children's perceptions of their teachers' behaviour in the classroom is limited and questionable. Even less research investigating children's perceptions has been conducted in the context of physical education. In fact, the only study investigating children's perceptions of their teachers' behaviour in physical education is by Martinek (1988). The findings of Martinek's (1988) study suggested that children do perceive differential teacher treatment in physical education class. Specifically, 33 low achievers and 27 high achievers (as rated by 11 teachers) in Grades 2 and 3 were asked how much praise, corrective skill feedback, and corrective behavioural feedback they received from their teachers in physical education class. Results showed that low achievers perceived they received smaller amounts of each type of feedback than high achievers.

Attributions for Differential Teacher Treatment. Research presented thus far suggests that children do perceive teachers to treat children differently in both the classroom and gymnasium. However, according to the Teacher Expectancy Model, children's performances and achievements will not be influenced by these perceptions unless they see themselves as being treated differently than others of different ability levels, and they attribute it to their ability. For example, the model predicts that children's performances will be negatively impacted if they (1) perceive teachers to treat children differently in physical education, (2) perceive themselves to receive treatment from the teacher that is similar to that received by poorly skilled children, and (3) attribute the treatment to their low ability (Martinek 1989, 1991). The model explains that attributions for teacher behaviours to ability influences children's performances because it affects

their perceived competence (either positively or negatively, depending on the whether treatment is preferential and communicates high performance expectancies, or unpreferential and communicates low performance expectancies) and, in turn, their motivation to learn. In order to understand this, three questions must be answered. First why do children attribute differential treatment to ability? Second, how do attributions to ability influence children's perceived competence, and third, how does perceived competence influence children's motivation to learn?

Martinek explains that children are likely to attribute differential treatment to ability because perceptions of differential treatment create a perceived performance climate that emphasises interpersonal competition and social comparison, and thereby places value on normative ability (Ames, 1992; Ferrer-Caja & Weiss, 2000, Martinek, 1991; Nicholls, 1989). In other words, differential teacher treatment communicates to children and provides them with information about who is more and less athletic, encouraging them to focus on normative ability (Nicholls, 1989). For the motor proficient child, this is not a problem. However, for children who are less motor proficient this can leave them doubting their motor abilities (Ames, 1989; Nicholls, 1989).

This relationship between perceived differential treatment and a perceived performance climate is supported in a study by Papaioannou (1995). In this study, 1393 junior and senior high school students were asked to complete the Perceptions of Physical Education Teacher's Behaviour questionnaire (Weinstein et al., 1987). The questionnaire measures students' perceptions of how often their physical education teachers expressed specific behaviours towards high and low achievers. Papaioannou found that students perceived that their teachers provided high achievers more preferential treatment, and low

achievers with more unpreferential treatment. A differential treatment score was calculated and correlated with subscale scores from the Learning and Performance Oriented Physical Education Classes Questionnaire (Papaioannou, 1994). The results showed that differential teacher treatment was positively related to the three perceived performance oriented subscales ($r = .15$, $r = .22$, and $r = .17$; all $ps < .001$), and negatively related to the two learning oriented subscales ($r = -.27$, $r = -.20$; $ps < .001$).

Another study by Ames (1984) shows that children's attention is more likely to focus on ability in a perceived performance climate than in a perceived motivational climate. In this study, 88 children in Grades 5 and 6 were randomly assigned to either a mastery or competitive climate. Those who were asked to solve line drawing puzzles in a mastery climate made significantly more effort related attributions for their successful performances than participants assigned to the competitive climate. Conversely, children in the competitive climate made significantly more ability related attributions to their performance than children in the mastery climate.

The next question to answer is how children's attributions to ability influence perceived competence? Martinek explains this using Weiner's (1986) Attribution theory. According to Weiner (1986), attributing a negative experience, such as failure, to ability is likely to reduce an individual's perceived competence because it leaves one feeling as if they have no chance of future success despite their efforts. This can be explained in terms of three causal dimensions: causal locus, controllability and stability. Causal locus refers to whether the outcome, in this case perceived teacher behaviours, was due to the child (internal) or to circumstances external to the child such as situational factors or the teacher (Martinek, 1988; Weiner, 1986). Weiner et al. (1979) confirmed that people

perceive ability and effort as internal causes, and task difficulty and luck as external causes. Controllability describes whether the reason for the perceived teacher behaviours is believed to be under the child's control (controllable) or not (uncontrollable). Effort is controllable because the child is perceived as being able to choose to perform to their potential. Conversely, task difficulty, luck and ability are defined as uncontrollable. Attributions for perceived teacher behaviours that are stable (i.e., ability and task difficulty) do not change greatly over time whereas unstable attributes (i.e., effort and luck) can vary between practice trials. Children who perceive unpreferential teacher behaviours after they perform poorly in physical education class, and believe they receive this treatment because they did not try their best, are likely to feel ashamed and be motivated to try harder because they understand that they have control over their level of performance, and can change the outcome next time. In contrast, children who perceive unpreferential teacher treatment and attribute it to their teacher's lousy mood are likely to be unaffected because they cannot control their teacher's temporary moods. However, if children attribute perceived unpreferential teacher treatment to their ability (i.e., a stable characteristic that they have little control over), their perceptions of competence are likely to be adversely affected because they realise there is nothing they can do to change the outcome (Martinek, 1989, 1991; Weiner, 1986).

Weiner's (1986) attribution theory makes the assumption that children have developed a mature understanding of effort and ability (Nicholls, 1989). Specifically, children are assumed to understand that ability is a relatively stable characteristic (Weiner, 1986), and in particular that one's best performance in sport and physical activity is limited by current ability (Fry & Duda, 1997). According to Fry & Duda

(1997) children younger than grade 3 have been shown to have an immature understanding of ability and effort. They believe that if they try harder, they will do better and may even be the best (Fry & Duda, 1997; Nicholls, 1989). Therefore Weiner's (1986) attribution theory is unlikely to predict the impact an outcome can have on the perceived competence of children younger than Grade 3. Even if younger children perceive negative teacher behaviour and attribute it to low ability, their understanding of the nature of ability prevents lasting negative effects on perceived competence and motivation (Nicholls, 1989).

This developmental trend has been noted in the following studies looking at children's association between emotions and attributions for outcomes. In one study by Weiner et al. (1982), children aged 5, 7 and 9 years (*n*s = 30, 37, 36 respectively) were told two stories about a student who failed a test. In one story, the teacher reacted by becoming angry with the student. In the other story, the teacher expressed pity towards the student. After they heard each story, participants were asked whether they thought the student failed due to (lack of) ability or effort. Once a response was selected, each participant was asked to indicate whether he or she believed the selected attribution was "a whole lot, a lot, some or a little of the cause of the student's failure" (p. 282). The results showed that all of the participants associated the teacher's angry response to the student's failure with lack of effort. However, while 9 year old children associated pity with low ability significantly more than the younger children, 5 year old children rated ability in response to anger significantly higher than older children. These results suggest that 5 year old children have yet to differentiate ability and effort, and therefore make different attributions for emotions than older children (Weinstein et al., 1982).

Further evidence supporting emotion-linked attributions in older children is provided in two other studies. The first study by Barker and Graham (1987) asked children 4 to 12 years of age to watch two videotaped sessions showing two children working independently on math problems. In one video, both students successfully solved the math problems; one student was praised for their work, and other student received neutral feedback. In the second video, although both students failed to solve the math problem, one was criticised and the other received neutral feedback. Children were asked to rate the two students' effort and ability in each video on a 5-point scale. All children associated criticism and praise with low and high effort respectively. A developmental trend was obvious in terms of ability. Whereas 4 and 5 year old children associated praise with high ability, 11 and 12 year old children inferred praise as an indicator of low ability. The association was mixed for 8 year old children. The second study by Graham & Barker (1990) examined attributions for unsolicited teacher help of 5 to 12 year old children. These children were asked to watch a videotape of two students working. A teacher silently watched one student, but helped the second student. Children were asked to rate the students in terms of their effort and ability. All children reported that the student who received help had lower ability than the student who received no help. However, whereas 11 and 12 year old children rated the student who received no help as having to elicit less effort, the 6 year old participants rated the helped student as eliciting less effort. From these findings, it appears that the development of the emotion-linked attributions seen in adults begins around the age of 8 years. This is similar to when Fry & Duda (1997) noted children to begin to demonstrate a mature understanding of effort and ability.

Therefore, according to Weiner's (1986) attribution theory, children who attribute unpreferential treatment from the teacher to their ability become convinced that there is little hope for performing well in the future, and their perceived competence decreases (Martinek, 1991; Weiner, 1986). How does a decrease in perceived competence influence children's motivation to learn? For children who feel there is little hope for success, the importance of trying hard is likely lost, and they will likely become less motivated to participate in physical education (Nicholls, 1989), to the point where they develop a state of learned helplessness (Rholes et al., 1980). In this case, the internal desire to learn, seek challenges and persist at activities (Ames, 1992) in physical education class will be lost (Ames, 1992; Nicholls, 1989). Consequently, the poorly skilled child, with low perceived competence will likely adopt maladaptive behaviours in order to try to avoid participating and thereby demonstrating their incompetence (Nicholls, 1989). They may withdraw from activities to prevent further public humiliation and to protect their perceived competence (Robinson, 1989).

The relationship between perceived competence, and motivation in physical education is supported by Mitchell (1996) and Yoo (1999). Both these researchers measured motivation using the Intrinsic Motivation Inventory (Ryan, 1982), which is comprised of four scales: (1) interest and enjoyment, (2) perceived competence, (3) effort or importance, and (4) pressure or tension. Yoo demonstrated that a learning-oriented climate, measured by the Perceived Motivational Climate in Sport Questionnaire (Serfriz. Duda & Chi, 1992), was associated with higher levels of interest, perceived competence and effort in 218 college students than the performance oriented climate ($p < .05$). Likewise, using results attained from the Physical Education Learning Environment

questionnaire (Fraser, Anderson & Walberg, 1983) completed by 322 students in Grades 6 to 8, Mitchell revealed a significant negative relationship for both boys (r = -.707) and girls (r = -.719) between the perceived threat to self-image subscale and intrinsic motivation in physical education. He also showed perceived competitiveness to be negatively correlated with intrinsic motivation for both boys (r = -.221; $p < .01$), and positively associated to perceived threat. Mitchell explained these results by saying that children who are forced to see their abilities negatively by the nature of the motivational climate they are in are less likely to be motivated to participate (Mitchell, 1996).

Pygmalion in Physical Education and Children with Movement Difficulties: Why Investigate?

The present study focuses on investigating aspects of the Teacher Expectancy Model with children who have movement difficulties. These are children who fail to perform culturally normative motor skills with acceptable proficiency, but who do not have any known neuromuscular difficulties (Wall, 1982, p. 254). These children demonstrate *clumsy* or *awkward* movement patterns (Bouffard et al., 1996).

It is important to examine the perceptions and attributions of children with movement difficulties in physical education because they are likely to negatively influence these children's performances in physical education. Children with movement difficulties are, by definition, poorly skilled. As such, and are likely to perceive themselves as receiving treatment similar to other poorly skilled children in physical education, and to attribute this to their poor ability. If children with movement difficulties perceive that their teachers treat students differently according to their athletic skill levels, they are likely to focus on their own ability and compare it to the ability of others

(Ames, 1992; Graham & Folkes, 1990; Nicholls, 1989). As these poorly skilled children look around, they will likely see that they do not perform as well as other students and begin to doubt their ability levels (Ames, 1992; Nicholls, 1989). They may attribute the differential treatment they perceive to "not being good at PE class." According to Weiner's Attribution theory (1986), attributing unpreferential treatment to ability will decrease the perceived competence of the poorly skilled children because they will realise that there is little chance for future success (Weiner, 1986). This, in turn, will decrease the children's motivation to participate in physical education class because doing so would only expose their inabilities (Nicholls, 1989). As a result, these children are likely to adopt maladaptive behaviours, such as strategies to avoid participation (i.e., behaving poorly) or refuse to try hard (Nicholls, 1989; Robinson, 1989).

Therefore, the concern for children with movement difficulties is that their perceptions of differential treatment may actually further contribute to their poor performance in physical education. Research suggests that children with movement difficulties participate less in physical activity than their peers without movement difficulties (Schoemaker & Kalverboer, 1994), and adopt maladaptive behaviours to avoid participating in physical education class (Thompson, Bouffard, Watkinson, & Causgrove Dunn, 1994). Therefore, adopting strategies to avoid participating in physical education or physical activity because of perceived differential treatment only further reduces their opportunities to learn motor skills in physical education. Consequently, their motor skills may be even poorer than they would otherwise be (i.e., with practice).

Withdrawing from participation in physical education may also has implications that extend beyond the physical domain. Failure to practice and improve motor skills may

negatively impact the social status of children with movement difficulties, given that athletic ability is a primary factor determining a social status—even in elementary school (Chase & Dummer, 2000). Research has shown children with low motor ability avoid playground activities, and spend more time alone on the playground and less time engaged in highly active games with others than their peers. Therefore, by avoiding participation in physical education, and thereby failing to improve their motor skills, children with movement difficulties are more likely to avoid social interaction that involves physical activity (Bouffard et al., 1996; Smyth & Anderson 2000). Based on the potential influence perceived differential teacher treatment can have on the performance and social status of children with movement difficulties, and the lack of current research available, it is apparent why it is important to study the perceptions and attributions of these children in physical education.

Purpose of the Study

The purpose of this study was to investigate how children with movement difficulties perceive teachers to treat students in physical education class, and their attribution for the perceived treatment. In doing so, the study expands the work by Marinek (1989, 1991) by determining the applicability of the Teacher Expectancy Model to physical education and children with movement difficulties.

It was hypothesised that children with movement difficulties would perceive that teachers treat students highly skilled and poorly skilled differentially in physical education. Moreover, it was expected that their perceptions of the treatment they receive personally would be congruent with how they perceive teachers treat other poorly skilled children. It was also expected that children with movement difficulties would attribute

the preferential treatment received by highly skilled students, and unpreferential treated received by poorly skilled students (including themselves) to ability.

Chapter 3

Method

Participants

Participants were 8 children (4 males and 4 females) in Grades 3 to 6 who experienced movement difficulties. They were recruited from the Children's Physical Activity Study Program (CPASP) at the University of Alberta and through referrals from physiotherapists in Edmonton, Alberta. The physiotherapists were employed by Capital Health and worked in schools. As mentioned in the Review of Literature, the decision to include children in at least Grade 3 was based on the developmental progression of the understanding of the concepts of effort and ability. Based on the descriptive data provided by Weinstein et al. (1982, 1987), a large effect size (ES = .70) was calculated for perceptions of teacher treatment towards high and low achievers using the formula provided by Thomas, Salazar and Landers (1991). To detect a large effect size (ES = .70) in the present study, with $p < .05$, and power set at .80, a minimum sample of 8 children was required (Sokel & Rolf, 1981).

Inclusion criteria. Children invited to potentially participate in the study were, in the opinion of either their CPASP coordinator or physiotherapist, suspected to have movement difficulties including one or more of the following: developmental coordination disorder, attention deficit hyperactivity disorder, learning disability, mild cerebral palsy, Asperger's syndrome, muscular dystrophy, or another disability that negatively affects movement but is not associated with cognitive delays or deficits. There is some evidence that delays in cognitive development are associated with delays in children's understanding of the meanings of effort and ability (Causgrove Dunn, 2003).

As part of the recruitment procedures, the children's movement difficulties were confirmed by administering the Movement Assessment Battery for Children (MABC, Henderson & Sugden, 1992). Only children who received a total performance score at or below the 15th percentile on the MABC were included in the study.

Other criteria included parental consent to participate and regular participation in physical education without support from a teaching aide. Regular participation in physical education was defined as absence from physical education class only under extraneous circumstances, such as acute illness or vacation.

Exclusion criteria. Children suspected of having movement difficulties were not invited to participate if the CPASP coordinator or physiotherapists suspected the presence of delays and deficits in cognitive development (intellectual impairments), moderate-to-severe cerebral palsy, moderate-to-severe autism, or sensory impairments. Other exclusion criteria included the presence of an acute injury. Children with an acute injury at the time of the study were excluded because this might affect MABC scores.

Measures

Child Information Questionnaire. Characteristics of participating children were assessed using the Children Information Questionnaire (see Appendix F). This questionnaire was completed by the children and their parents or guardians. It asked parents and children to provide demographic information such as age, gender, disabilities, and injuries. It also requested information about physical education classes including: the frequency of physical education classes per week, the duration of physical education classes, and whether participation was regular — with or without the help of an aide.

Movement Assessment Battery for Children (Henderson & Sugden, 1992). Each potential participant was administered the MABC. The MABC was designed to measure motor impairment in children aged 4 to 12 years. The test includes 8 tasks that assess three domains of motor ability (manual dexterity, ball skills, and balance). Specific tasks differ across four age bands. For example, specific tasks for children aged 7 to 8 (Age Band 2) include peg placing, threading beads, and flower trail to assess manual dexterity; one hand bounce and catch, and throwing bean bags to assess ball skills, and; stork balance, hopping in squares, and heel-toe walk to assess balance. Specific tasks for children aged 9 to 10 (Age Band 3) include peg shifting, threading nuts on bolts, and flower trail to assess manual dexterity; two hand catch, and throwing bean bags to assess ball skills, and; one board balance, hopping in squares, and balancing on a ball to assess balance. Scores on the 8 tasks are summed to provide a total performance score out of 40, which can be converted into a percentile score (Henderson & Sugden, 1992)

The MABC was standardized using a population of 1234 children aged 4 to 12 years from the United States. Although the MABC is reported to have "good" reliability and validity, the evidence provided in the test manual is based on studies of the validity and reliability of the MABC predecessor, the Test of Motor Impairment-Henderson Revision (TOMI-H), with the exception of one task at Age Bands 2 and 3. The test items on the MABC are the same as those on the TOMI-H; however the criteria for scoring, the norms, and task descriptions are different (Henderson & Sugden, 1992). Nevertheless, subsequent studies conducted by other researchers provide evidence to support the MABC's reliability and validity. A study by Tan et al. (2001) examined the concurrent validity of the MABC with both the McCarron Assessment of Neuromuscular

Development (MAND) and the Bruininks-Osteretsky Test of Motor Proficiency-Short Form (BOTMP-SF) with 52 children aged 4 to 10 years. The researchers reported a Spearman rank order correlation of .84 between MABC percentile scores and standard scores from the BOTMP-SF, and .86 between the MABC percentile scores and MAND Neuromuscular Development Index scores. This study also reported that the MABC and MAND demonstrated similar sensitivity in identifying children with motor impairment, although the MABC resulted in fewer false positive classifications than the MAND. Croce, Horvat and McCarthry (2001) examined test-retest reliability following a one-week interval with 106 children (67 males and 39 females) between the ages of 5 and 12 years. The children were grouped as follows into age bands corresponding to the age bands in the MABC: 5 to 6 years (n = 20), 7 to 8 years (n = 20), 9 to 10 years (n = 46), 11 to 12 years (n = 20). They reported intraclass correlation coefficients (ICC) for the mean percentile rankings in each age band. The values ranged from ICC = .92 to ICC = .98.

Teacher Treatment Inventory. The TTI (Weinstein et al., 1987) was used to measure children's perceptions of teacher behaviours toward three children of differing skill levels in their physical education class: (a) a highly skilled child, (b) a poorly skilled child, and (c) the participant (self). To measure children's perceptions of teacher behaviours towards the three target children, the participants completed three versions of the inventory three separate times. Each version contains 30 items grouped into three subscales: (a) negative feedback and direction, (b) work and rule orientation, and (c) high expectations, opportunity and choice. The difference between the three versions is the description of the target child that participants were instructed to think about when responding to the items.

The TTI is based on the TTI developed by Weinstein et al. (1987). It is intended to measure children's perceptions of how teachers treat students in the classroom. The items in the earliest version of the TTI were developed based on information from two sources. The first source was the literature discussing observed differential teacher treatment toward students in the classroom, and specifically to the literature pertaining to relationships between teacher behaviours and student achievement, students' perceptions of the classroom environment, and the expression of teachers' expectations through behaviour. The second source was information from interviews with children about classroom life for high and low achieving children (Weinstein, 1989; Weinstein & Middlestadt, 1979). The original version of the inventory consisted of 44 items (Weinstein et al., 1982). Two hundred and thirty four children in Grades 4 to 6 completed one of four versions of the inventory assigned to them that varied in terms of the target student's gender and ability. Children in each class were randomly assigned to assess teacher treatment toward either a male or female, high or low achiever. Factor analysis of the pooled within-group covariance matrix was conducted using the minimal residual (MINRES) extraction technique. The scree plot was used to determine the number of factors to retain. The plot of the eigenvalues levelled off after four factors, accounting for 25% of the variance. The four factors were labelled (a) supportive help, (b) negative feedback and direction, (c) work and rule orientation, and (d) high expectations, opportunities and choice. The supportive help subscale included 10 items reflecting teachers help and support toward students. The work and rule orientation subscale contained 10 items including how strongly teachers emphasise learning, completing assignments, and obeying rules. Twelve items grouped in the negative feedback and

direction factor described teacher responses of negative feedback toward students' work and effort, and the degree of control teachers' employ over their students' activities. The high expectation, opportunity, and choice subscale contained 11 items and described teachers' trust in their students, positive feedback or positive feelings towards students, and opportunities to participate and work independently (Weinstein et al., 1982). Only one of the 44 items loaded low on all four factors and was removed.

The TTI was then shortened and revised by Weinstetin et al. (1987), based on results from Weinstein et al. (1982). The supportive help subscale was removed because it failed to differentiate treatment of high and low achievers. Only three items from this subscale showing the largest differentiation between high and low achievers were retained in the inventory and moved to the subscale they correlated most highly with. Of the three items, two were moved to the negative feedback and direction subscale, and one item was moved to the work and rule orientation subscale. A further seven items from the remaining three subscales were removed because they either differentiated the least between high and low achievers, had the lowest item-scale correlation, or were interpreted differently by different children (Weinstein et al., 1987). Following the revisions, the inventory consisted of the three following subscales containing 10 items each (a) negative feedback and direction, (b) work and rule orientation, and (c) high expectations, opportunity, and choice.

Weinstein et al. (1987) administered the inventory twice to 579 children from 30 classes in 12 urban schools. There were ten classes each from Grades 1, 3, and 5. The first time they administered the inventory by asking children to respond to every item on the inventory while thinking of how a teacher would treat one of four target children in

the classroom: either a male or female, high or low achiever. The target child that participants were asked to think about when responding were randomly assigned. The high achiever was described to participants as, "someone who does really well in school, in fact he/she always gets the best grades in class. Everyone thinks he/she is very smart." (Weinstein et al., 1987, p.1082). Conversely, the low achiever children were asked to think about when responding to the inventory was described as, "someone who does not do very well in school. In fact, he/she usually gets the lowest grades in the class. Everyone thinks he/she is not very smart." (p.1082). The second time the inventory was administered to all the children they were asked to respond to it by thinking about themselves. Children responded to each item by rating how often they thought their teacher demonstrated specific behaviours toward the target child (high or low achiever, and themselves) in the classroom by marking one of the four increasingly larger circles representing *never*, *sometimes*, *often*, and *always*. Each rating was subsequently assigned a numerical value: 4 (*never*), 3 (*sometimes*), 2 (*often*) and 1 (*always*) for data analysis (Weinstein et al., 1982).

Weinstein et al. (1987) also examined the reliability of the 30-item inventory in the form of internal consistency and test-retest reliability coefficients using a separate sample of 318 children from Grade 1 ($n = 87$), Grade 3 ($n = 94$), and Grade 5 ($n = 137$). Internal consistency coefficients in the form of Cronbach's alpha (α) were reported for each subscale. For negative feedback and direction, $\alpha = .69$ for Grade 1 and 3, and $\alpha = .70$ for Grade 5. For the work and rule orientation subscale, $\alpha = .58$ (Grade 1), $\alpha = .68$ (Grade 3), and $\alpha = .63$ (Grade 5). Finally, $\alpha = .81$ (Grade 1), $\alpha = .78$ (Grade 3), and $\alpha = .84$ (Grade 5) for the high expectation, opportunity and choice subscale. Test-retest

reliability estimates over a 2 week period were reported for each subscale in the form of Pearson product-moment correlation coefficients: $r = .67$ (Grade 1), $r = .74$ (Grade 3), and $r = .77$ (Grade 5) for negative feedback and direction subscale; $r = .65$ (Grade 1), $r = .69$ (Grade 3), and $r = .75$ (Grade 5) for work and rule orientation subscale; $r = .78$ (Grade 1), $r = .77$ (Grade 3), and $r = .83$ (Grade 5) for high expectation, opportunity and choice subscale.

The TTI used in this study (see Appendix G) was similar to the version published in Weinstein et al. (1987) with three exceptions. First, descriptions of the high achievers and low achievers in the classroom were changed to describe highly skilled and poorly skilled children in physical education. Second, individual items were altered so that they refer to physical education class and the physical educator (rather than the classroom and classroom teacher). Third, unlike the studies by Weinstein et al. (1982, 1987), the gender of the hypothetical student was not specified when administering the inventory. This decision was based on the results of Weinstein et al. (1982), showing that the sex of the hypothetical student did not differentially affect students' perceptions of teacher behaviours toward high and low achievers.

Procedures

As mentioned previously, potential participants for the study were recruited from CPASP and through referrals from physiotherapists employed by Capital Health and working in the schools. To recruit participants from CPASP, the coordinator of CPASP was contacted in person and asked if she would be willing to distribute a letter (see Appendix A) to parents who had identified their children as having movement difficulties on the registration form. Similarly, to recruit participants through Capital Health,

physiotherapists were contacted and asked if they were willing to inform parents of children with suspected motor difficulties about the study. Those who responded positively were provided with several copies of the letter to distribute to parents.

Interested parents then contacted the researcher directly either by email or telephone. The researcher briefly explained the study to the parents who contacted her, and answered any questions they had. Parents who expressed continued interest in having their child participate were provided with an information package that contained (a) information letters for both the parents and child to complete (Appendixes B & C), (b) consent forms for both the parent and child to complete (Appendixes D & E), (c) a Child Information Questionnaire for parents to complete (see Appendix F), and (d) a self-addressed and stamped envelope. Families who returned the completed forms and Child Information Questionnaire were contacted by the researcher (by telephone), and the first of two data collection sessions were scheduled. Of the 95 letters provided to the CPASP coordinator and physiotherapists for distribution, 10 parents contacted the researcher, agreed to receive the information, and returned the package. Data sessions were scheduled for 8 out of the 10 potential participants: one child was removed from the study by the parent prior to data being collected, and another child was too young to participate in the study.

During the first data collection session, the MABC was individually administered to each potential participant to confirm the presence of movement difficulties. All the potential participants ($N = 8$) received a score at or below the 15th percentile, thereby confirming the presence of movement difficulties (Henderson & Sugden, 1992). All 8 children were invited to participate in the study and provided their assent. Immediately

following the motor ability assessment, participants were asked to complete one of the three versions of the TTI, and the accompanying attribution interview. The order each child completed the three versions of the TTI was counterbalanced to reduce the likelihood of an order effect.

The administration of the first version of the inventory began with a recall procedure to facilitate the participant's recollection of physical education classes. This was done to increase the likelihood that the child's responses to the inventory items reflected his or her experiences in physical education. Participants were asked to close their eyes and imagine they were in their physical education class. Each participant was instructed to describe and name the target child he or she had been asked to think about (i.e., a highly skilled child, poorly skilled child, or self) when responding to the inventory items. The child was also asked to describe his or her physical education classes in terms of the types of activities done, and favourite and least favourite activities, and whether or not classes were fun.

Following the recall procedure each participant was asked to rate his or her skill level in relation to other poorly skilled and highly skilled children. This provided an indication of the child's perceived normative skill level. To do this, the child was asked to indicate his or her skill level by marking on a line that was anchored at one end by *most highly skilled* and the other end by *most poorly skilled.*

Next, the researcher administered the first inventory and accompanying interview. The purpose of the interview was to obtain attributional information. The procedure was as follows: the researcher read an inventory item as written, and then asked the participant to rate how often the teacher demonstrated the specific behaviour toward the

target child. The participant indicated his or her response by either marking one of the four decreasingly smaller circles representing *always*, *often*, *sometimes* and *never*, or by indicating the appropriate circle for the researcher to mark. If a child was unable to understand the item, it was rephrased. Next, the researcher asked the participant to explain why he or she thought the target child received the indicated amount of the particular teacher behaviour (Martinek, 1988). For example, if a child answered that the target child is "*always* called on to demonstrate skills by the teacher," the investigator immediately asked, "Can you tell me why you think the teacher *always* calls on (name of target child) to demonstrate skills?" The researcher recorded the participant's response verbatim and then continued by asking the child to respond to the next item. This procedure continued until all of the items on the inventory, and corresponding attribution questions were completed.

In order to improve the accuracy of the child's responses, understanding checks were occasionally conducted, and the child was given many short rest breaks during the administration of the inventory and attribution interviews. The researcher checked a child's understanding by (a) asking which of *always*, *often*, *sometimes* or *never* represented more, or (b) asking whether the target child the participant was thinking of was "good at gym class" or "not so good at gym class."

The second data collection session was conducted between 7 and 10 days after the first session. During this session, the participant completed the inventory and attribution interview two more times, each time thinking about a different target child not done during the first session (highly skilled child, poorly skilled child, or self). Procedures for administering the inventories and interviews are the same as described for Session 1. The

participant was given 5 minutes of free play after completing the first inventory and attribution interview. This play break was intended to reduce the likelihood that the child would respond to the inventories by directly comparing the two target children the participant was asked to focus on (e.g., self and highly skilled child). Instead, it was hoped that the child would be more likely to respond in a manner that reflected the child's perceptions of teacher treatment (Weinstein & Middlestadt, 1979; Weinstein et al., 1982, 1987).

Following data collection, the child's reasons (i.e., attributions) for why the child (self), a highly skilled child and poorly skilled child received the indicated amount of perceived teacher behaviours were independently coded by two investigators into one of the following categories: ability, self, teacher and situation. Definitions of the four attributional categories are included in the section describing results of the pilot study. The coding system employed here differs from that used by Martinek (1988) in that Martinek did not separate attributions to self in terms of controllability. For example, attributions for receiving corrective behaviour feedback from the teacher to effort or to ability were both coded as self by Martinek (1988). Based on Weiner's (1986) attribution theory, the decision was made to differentiate between the two for the present study. Weiner (1986) postulated that attributing a successful or positive outcome to either effort or ability, or failure outcome to external factors or lack of effort will enhance or maintain perceived competence. Conversely, Weiner also suggested that attributing failure or negative outcomes to ability, and success outcomes to factors other than oneself, negatively influence perceived competence.

Prior to the initiation of the study, a pilot study was carried out on a subsample of two children. The purposes of the pilot study were to: (1) ensure the reasons children provided for the perceived teacher behaviors could be coded; (2) examine interrater reliabilities of the MABC, TTI, and the attributional coding; and (3) ensure that the children were able to understand the inventory items and questions regarding their attributions for teacher behaviours. Procedures for the pilot study were similar to those already described with one exception. During the pilot study two researchers administered all procedures in order to establish interrater reliabilities on all tests and ensure that a minimum agreement of .8 was established prior to the study beginning. Any disagreements in scoring or coding were clarified immediately (Fish & Dane, 2000; Martinek, 1988).

Chapter 4

Results

Pilot Study

Interrater reliability. The calculation of interrater reliability for the MABC was based on data obtained from two children. One child was a 9 year old female in Grade 3. She was recruited from CPASP and was described by parents as having movement difficulties. The other child was a 6 year old female in Grade 1 who did not have movement difficulties in the opinion her parents. Both children were administered the MABC individually by the researcher. Items were scored simultaneously by the researcher and another graduate student who was present during the testing.

Interrater reliability was calculated for both children by dividing the number of item scores that the two raters agreed on by the total number of items scored (i.e., 8). Interrater reliability for each child was calculated to be .88 and .75 (for both children combined, $M = .82$). Disagreements on item scores were due to: (a) confusion about when practice trials ended and the actual test began for the ball skill tasks, and (b) failure to record a task score by one of the raters.

Interrater reliability for the TTI was calculated for four completed versions of the inventory. The child with movement difficulties completed three versions of the inventory: one each for the highly skilled target child, poorly skilled target child, and self as target child. The child who did not have movement difficulties completed the version focussed on the highly skilled target child. The inventories were administered by the researcher, and were scored simultaneously by the researcher and the same graduate student who was present during the administering of the MABC. Interrater reliability for

each version was determined by dividing the number of items that the two raters agreed upon by the total number of items scored (i.e., 30). For each of the four inventories, the interrater reliability was > .8. Disagreements between the two raters were due to the raters failing to mark the correct circle.

Interrater reliability for the attribution coding was also established by calculating the agreement between the researcher and a graduate student assistant. The attribution interviews were conducted by the researcher as described in the methods section. Both coders recorded the responses. The participant with movement difficulties completed three interviews: one focussed on each of the highly skilled target child, the poorly skilled target child and self as target child. The participant who did not have movement difficulties completed the attribution interview about the highly skilled target child.

The researcher and an independent graduate student (i.e., different than the one present during the administrations of the inventories and attribution interviews) coded the responses into one of four categories: ability, self, situation, and teacher. These categories were defined according to Weiner's (1986) Attribution theory and involved 3 dimensions: causal locus, controllability, and stability. Recall that causal locus refers to whether the outcome, in this case perceived teacher behaviours, was due to personal characteristics of the children (i.e., ability, self), or to circumstances external to the children (i.e., situational, teacher). Controllability describes whether the reasons for the perceived teacher behaviours were believed to be under children's control (i.e., self) or not (i.e., ability, situation, teacher). Stability refers to whether perceived teacher behaviours were explained by factors that were expected to remain relatively stable over time (i.e., ability), or likely to change greatly over time (i.e., attributes to self or teacher).

Based on consideration of these dimensions, attributions were coded as follows: *ability* referred to an innate trait that the child could not control or change drastically over time; *self* referred to reasons that were innate to the child, but that the child could control and therefore change over time; *teacher* referred to characteristics of the teacher that the child could not control and that may or may not change over time, and; *situation referred to* factors unrelated to the child or teacher, that were either stable or unstable over time (Weiner, 1986). If children could not explain why the teacher behaved in the perceived manner, or if the reason they provided could not be coded into the four categories described above, the attribution for that item was coded as *don't know*.

Interrater reliability was calculated by dividing the number of agreements in coded responses by the total number of coded responses provided (i.e., 30). This included those responses coded as *don't know*. Interrater reliability was determined to be > .8 for each of the four interviews. All initial disagreements were discussed until an agreement was reached among the coders.

Through this process, clearer definitions of the four attribution categories were established for coding purposes. The definitions were still based on Weiner's (1986) three dimensions and are as follows:

Ability refers to a child's skill level, such as "being good or bad" at sports, games, or "gym stuff", or "knowing how to do it". Ability implies an innate quality of the child that is not easily controlled by the child and therefore is unlikely to change drastically over time. *Self* refers to changeable characteristics of the child that he or she controls. Some examples include effort (e.g., trying hard or "just trying to do it"), or behaviour in physical education class (e.g., whether or not the target child listens or "causes mischief"

in physical education class). *Teacher* refers to stable or unstable characteristics of the teacher. Reasons attributed to the teacher include those that express the teacher's desire not to hurt the student's feelings (e.g., not doing something "because that would make the child feel bad", or because that "would be rude") as well as those that allude to an instructional strategy (e.g., the teacher "always allows everyone to pick" who they work with in class, or "the teacher always explains how to do it.") Finally, *situation* refers to any factor that is unlikely to change and is outside both the child and teacher's control. An example of this is an attribution to the class size (e.g., "too many people in the gym.")

Main Study

Demographic Information and Perceived Skill Levels in Physical Education. Demographic information about the participants was collected using the Child Information Questionnaire and can be found below in Table 1. The sample contained eight children (4 male, 4 female). The MABC total impairment score for all eight participants fell within the first percentile, indicating the presence of definite motor problems (Henderson & Sugden, 1992). In light of this finding, it was surprising to find that none of the participants rated their own skill level in physical education as "poorly skilled". Seven participants indicated their skill level to be between that of highly and poorly skilled children, and one participant rated his skill level as that of a highly skilled child.

Table 1

Demographic Information

	Range	*M*	*SD*
Age (years)	7-12	9	1.7
Grade	3 - 6	3.9	1.4
MABC			
Total impairment score	18 - 28	21.8	3.3
Percentile equivalent	1st		

Note. Maximum Total Impairment score on MABC = 40. All total impairment scores fall in the 1st percentile equivalent, interpreted as indicating all participants have definite motor problems (Henderson & Sugden, 1992).

Perceptions of Teacher Treatment According To Skill Level. Mean frequency ratings and standard deviations for perceived teacher treatment toward the highly skilled target child, poorly skilled target child, and self can be found in Table 2. The data were checked to determine whether any outliers were present. All individual subscale scores were found to be within 3 standard deviations of the mean subscale scores; therefore it was concluded that no outliers were present in the data.

Comparing the mean subscale scores in Table 2, it appears that participants (on average) perceived that they receive negative feedback and direction less often than either the poorly or highly skilled target children. Participants also perceived that they receive high expectations, opportunities, and choice more often than poorly skilled target children, but less often than highly skilled target children. Conversely, they felt that teachers provide them with work and rule orientation more often than highly skilled

target children, but less often than poorly skilled target children. Overall, these results are congruent with participants' ratings of their own skill levels compared to highly and poorly skilled target students in physical education. As already mentioned, seven participants rated their skill level as between that of highly and poorly skilled target children, while one rated himself as a highly skilled child in physical education class.

Pearson product moment correlation coefficients calculated among the three TTI subscale scores for the highly skilled target child, poorly skilled target child, and self as target are shown in Table 3.

Table 2

Mean Frequency Ratings and Standard Deviations of Perceived Teacher Treatment Toward Highly Skilled Target Children, Poorly Skilled Target Children, and Children with Movement Difficulties (Self)

	Highly Skilled		Poorly Skilled		Self	
	M	*SD*	*M*	*SD*	*M*	*SD*
Negative feedback & direction	2.975	.4621	2.775	.6228	3.188	.4121
Work & rule orientation	2.850	.5581	2.238	.6046	2.463	.7633
Expectation, opportunities & choice	2.463	.6718	2.900	.5707	2.675	.5230

Note. Mean frequency rating of teacher treatment was 1 (*always*) and 4 (*never*)

*$p < .02$

Table 3

Correlations Among Perceived Teacher Treatment Toward Highly Skilled Target Children, Poorly Skilled Target Children, and Children with Movement Difficulties (Self)

	1	2	3
Negative Feedback and Direction ($n = 8$)			
1. Highly Skilled	-	.742*	.433
2. Poorly Skilled		-	.694
3. Self			-
Work and rule orientation ($n = 8$)			
1. Highly Skilled	-	.506	.840*
2. Poorly Skilled		-	.827*
3. Self			-
Expectations, opportunity and choice ($n = 8$)			
1. Highly Skilled	-	.820*	.871*
2. Poorly Skilled		-	.881*
3. Self			-

*$p < .05$

Examination of the magnitudes of the correlations among the subscales indicate that participants' perceptions of the frequency of work and rule orientations they receive

from teachers was more closely related to their perceptions of the frequency of work and rule orientations received by highly skilled children than poorly skilled children. Conversely, correlations between the high expectations, opportunities, and choice subscale scores suggest that the frequency of leadership opportunities, activity choices, and positive performance feedback that participants perceived they received from teachers was more closely related their perceptions of that received by poorly skilled children than highly skilled children. Finally, correlations calculated for the negative feedback and direction subscale reveal that participants' perceptions of how often they received this type of treatment from teachers was not related to their perceptions of how often either highly skilled or poorly skilled target children received them.

In analyzing the TTI data, the first test compared participants' perceptions of treatment received by highly and poorly skilled target children only. This was done to see whether participants' perceptions of teacher treatment were congruent with results of previous research (Brattesani et al., 1984; Middlestadt & Weinstein, 1979; Weinstein et al., 1982, 1987). To investigate this, paired *t*-tests were conducted comparing the mean subscale scores between poorly and highly skilled target children (see Table 2), using SPSS 11.0. Because a total of 3 paired *t*-tests were performed, a Bonferroni correction was used to reduce the risk of a Type I error. For a family-wise alpha value of .05, the per-comparison value was set at .02. Significant differences (i.e., $p < .02$) were found in perceived teacher treatment toward poorly versus highly skilled target children for the following subscales: work and rule orientation [$t(7) = 2.991$, $p = .02$ (two-tailed), ES = 1.05]; expectations, opportunities and choice [$t(7) = -3.212$, $p = .015$ (two-tailed), ES =

0.701]. Nonsignificant results were found for the negative feedback and direction subscale [$t(7) = 1.355$, $p = .218$ (two-tailed), ES = 0.363].

These results suggest that children with movement difficulties perceived teachers to treat highly and poorly skilled children differently. In general, teachers were perceived to provide poorly skilled children with expectations, opportunities and choices less often than highly skilled children. If the behaviours assessed by the items in the subscale are considered, this would mean that some poorly skilled children were perceived to receive activity choices, leadership roles, and positive performance feedback less frequently than highly skilled children. Conversely, highly skilled children were perceived to receive work and rule orientations less often than poorly skilled children. According to the items assessed in the subscale, participants thought that teachers demonstrated more frequent work and rule orientations toward poorly skilled children by enforcing class rules strictly, expressing concern over their performances. They were perceived to show concern by providing help (both from themselves and other students as directed by teachers) and corrective feedback, and spending time ensuring poorly skilled children understood activities more often than they did highly skilled children. Finally, participants with movement difficulties believed that poorly and highly skilled children received similar amounts of negative feedback and direction from teachers in physical education class. If the items assessed in the negative feedback and direction subscale are considered, this suggests that participants felt their teachers responded similarly to the effort and performance of poorly and highly skilled children, offering similar amounts of negative feedback and control over activities to poorly skilled children as highly skilled children during physical education classes.

Next, the analyses examined how participants with movement difficulties perceived themselves to be treated by teachers, in comparison to their perceptions of how poorly skilled children are treated during physical education classes. Three paired *t*-tests were conducted using SPSS 11.0 to compare the mean subscale scores between participants and poorly skilled target children. Because three *t*-tests were performed, a Bonferroni correction was used to reduce the risk of a Type I error. For a family-wise alpha value of .05, the per-comparison value of alpha was set at .02.

The results showed that participants with movement difficulties did not perceive that teachers treat them significantly differently from poorly skilled children on any of the three subscales. Nonsignificant (i.e., $p > .02$) results were found for all three subscales: negative feedback and direction [$t(7) = -2.601$, $p = .04$ (two-tailed), ES = -.780]; work and rule orientation [$t(7) = -1.480$, $p = .183$ (two-tailed), ES = -.327]; expectations, opportunity and choice [$t(7) = 2.346$, $p = .051$ (two-tailed), ES = .411].

Attributions for Perceived Teacher Behaviors. Participant's attributions for perceived teacher treatment were coded into one of four categories: ability, self, teacher, and situation. In the present study, teacher treatment was categorized as preferential and unpreferential. Preferential treatment was defined as differential teacher treatment that participants perceived positively and therefore may positively influence perceived competence. Conversely, unpreferential treatment was defined as differential teacher treatment that participants perceived negatively and therefore may negatively influence perceived competence. To determine whether children negatively or positively perceived the teacher behaviours on items on the TTI, the frequency ratings on the TTI, as well as attribution responses provided in the interview were considered.

In terms of frequency ratings, preferential treatment were items on the expectations, opportunity and choice subscale with a rating of 1 (*always*) or 2 (*often*), as well as items from the negative feedback and direction, and work and rule orientation subscales rated as a 3 (*sometimes*) or 4 (*never*). In contrast, unpreferential treatment were items in the expectations, opportunity and choice subscale with a rating of 3 (*sometimes*) or 4 (*never*), as well as items from the negative feedback and direction, and work and rule orientation subscales with a ratings of 1 (*always*) or 2 (*often*). The coding was based on previous work by Weinstein et al. (1982, 1987). In these previous studies, children in Grades 1 though 6 perceived high achievers to receive expectations, opportunities and choice more often than low achievers, and low achievers to receive more negative feedback and direction, and more work and rule orientations than high achievers. Attribution responses were also considered when determining whether children considered an item on the TTI as representing preferential or unpreferential teacher behaviour. If attribution responses contradicted the classification of the items as preferential or unpreferential based on the frequency ratings from the TTI, the typical interpretation that children made of the item was clarified to the participant and he or she was asked to rate the item again. For example, item 10 of the work and rule orientation subscale asks the child to rate "how often does your gym teacher spend more time working with (the child) in gym class?" Previous research by Weinstein et al. (1982, 1987) found that high achievers typically rate this item 3 (*sometimes*) or 4 (*never*), while low achievers typically rate this item 1 (*always*) or 2 (*often*). In other words, more help from the teacher seems to imply lower ability. The ratings combined with the attributions confirmed that present participants interpreted this item in a similar manner to Weinstein

et al.'s participants. Therefore, if a participant rated his or her response to this item as a 1 (*always*) and then attributed it to "because the teacher thinks I'm really good and helps me so that I can get even better", the interviewer would reword the question to "how often does your teacher spend more time working with you because you are doing something wrong?" This type of situation rarely occurred, and in all cases the rating was revised to reflect the common interpretation of the item.

The frequencies of attributions provided for perceived preferential and unpreferential teacher behaviours were coded into each of the four attribution categories (i.e., ability, self, teacher, and situation), and are presented separately in three tables. Specifically, Table 4 contains the attribution category frequencies for perceived preferential and undesirable teacher treatment toward highly skilled target children. Table 5 contains the same information for the poorly skilled target children, and Table 6 contains this information for self (i.e., participants with movement difficulties).

Three chi-square analyses were conducted using SPSS 11.0: one each for the highly skilled target children, poorly skilled target children, and self. The purpose of these analyses was to investigate differences in proportions of attributional tendencies for preferential and unpreferential teacher behaviours received by the three different target groups. The Bonferroni correction was used to set the per-comparison value of alpha at .02 (family-wise value = .05).

Table 4 shows that highly skilled children were perceived to receive more preferential (71.5%) than unpreferential treatment (28.5%). Of the total amount of preferential treatment perceived, 62.0% was attributed to characteristics of the highly skilled target children (37.0% ability, 25.0% self), and 38.0% was attributed to reasons

the children had no control over (37.0% teacher, 1.0% situation). Of the total amount of unpreferential treatment perceived, 67.4% was attributed to reasons external to the highly skilled target children (58.1% teacher, 9.3% situation). The remaining 32.6% of unpreferential treatment was due to characteristics of the highly skilled target children (9.3% ability, 23.3% self). Chi-square analysis showed that overall, the different types of attributions differed significantly between the types of treatment (χ^2 [7, N = 151] = 97.318, p = .001). Although this analysis does indicate significant differences in the expected frequencies on the two rows of Table 4, it does not allow any statements about the significant differences between specific types of attributions.

Table 4

Number of Attributions for Perceived Teacher Treatment Toward Highly Skilled Target Children (N = 151)

	Ability	Self	Teacher	Situation	Total
Preferential	40	27	40	1	108
Unpreferential	4	10	25	4	43

Note. Preferential treatment = items in the high expectations, opportunity and choice subscale with a rating of 1 (*always*) or 2 (*often*), and items from the negative feedback and direction, and work and rule orientation subscales rated as a 3 (*sometimes*) or 4 (*never*). Unpreferential treatment = items on the high expectations, opportunities and choice subscale with a rating of 3 (*sometimes*) or 4 (*never*), and ratings of 1 (*always*) or 2 (*often*) on the items of the negative feedback and direction, and work and rule orientation subscales were considered undesirable teacher treatment.

* $p < .05$, χ^2 (7, N = 151) = 97.318, p = .001

Table 5

Number of Attributions for Perceived Teacher Treatment Toward Poorly Skilled Target Children (N = 153)

	Ability	Self	Teacher	Situation	Total
Preferential	9	22	33	2	66
Unpreferential	23	28	34	2	87

Note. Preferential treatment = items in the high expectations, opportunity and choice subscale with a rating of 1 (*always*) or 2 (*often*), and items from the negative feedback and direction, and work and rule orientation subscales rated as a 3 (*sometimes*) or 4 (*never*). Unpreferential treatment = items on the high expectations, opportunities and choice subscale with a rating of 3 (*sometimes*) or 4 (*never*), and ratings of 1 (*always*) or 2 (*often*) on the items of the negative feedback and direction, and work and rule orientation subscales were considered undesirable teacher treatment.

• $p < .05$, χ^2 (7, N = 153) = 63.000, p = .001

Frequencies of coded attributions for perceived teacher treatment toward the poorly skilled target child are shown in Table 5. From the table it appears that children with movement difficulties perceived poorly skilled children to receive more unpreferential (56.9%) than preferential treatment (43.1%) from teachers. Of the total amount of unpreferential treatment perceived, 41.4% was attributed to factors beyond the poorly skilled target children's control (39.1% teacher, 2.3% situation). The remaining 58.6% of unpreferential treatment was attributed directly to the poorly skilled target children (26.4% ability, 32.2% self). Of the total amount of preferential treatment perceived, 53.0% was attributed to reasons external to the poorly skilled target children (50.0% teacher, 3.0% situation). The remaining 47.0% of preferential treatment was

attributed to the poorly skilled target children (13.7% ability, 33.3% self). Chi-square analysis showed that overall, the different types of attributions differed significantly between the types of treatment (χ^2 [7, N = 153] = 63.000, p = .001). Although this analysis does indicate significant differences in the expected frequencies on the two rows of Table 5, it does not allow any statements about the significant differences between specific types of attributions.

Frequencies of attributions coded into the four categories for teacher behaviours that participants perceived they receive themselves are found in Table 6. Children with movement difficulties perceived they receive more preferential (64.7%) than unpreferential treatment (35.3%). Of the total number of attributions for perceived preferential teacher treatment toward the participants, 50.5% was attributed to their own personal attributes (23.7% ability, 26.8% self). The remaining 49.5% of preferential treatment was attributed to reasons beyond the participants' control (46.4% teacher, 3.1% situation). Of the total amount of unpreferential treatment the participants perceived they receive, 30.2% was attributed to their own personal characteristics (11.3% self, 18.9% ability). The remaining 69.9% of unpreferential treatment was attributed to reasons beyond the participants' control (64.2% teacher, 5.7% situation). Chi-square analysis showed that overall, the different types of attributions differed significantly between the types of treatment (χ^2 [7, N = 150] = 92.133, p = .001). Although this analysis does indicate significant differences in the expected frequencies on the two rows of Table 6, it does not allow any statements about the significant differences between specific types of attributions.

Table 6

Number of Attributions for Perceived Teacher Treatment Towards Self (N = 150)

	Ability	Self	Teacher	Situation	Total
Preferential	23	26	45	3	97
Unpreferential	10	6	34	3	53

Note. Preferential treatment = items in the high expectations, opportunity and choice scale with a rating of 1 (*always*) or 2 (*often*), and items from the negative feedback and direction, and work and rule orientation subscales rated as a 3 (*sometimes*) or 4 (*never*). Unpreferential treatment = items on the high expectations, opportunities and choice subscale with a rating of 3 (*sometimes*) or 4 (*never*), and ratings of 1 (*always*) or 2 (*often*) on the items of the negative feedback and direction, and work and rule orientation subscales were considered undesirable teacher treatment.

* $p < .05$, χ^2 (7, N = 150) = 92.133, p = .001

Chapter 5

Discussion

The purpose of this study was to examine if children with movement difficulties perceive their teachers to treat students of differing skill levels in physical education, and how they explain or attribute this differential treatment. This was deemed important because: (1) the Teacher Expectancy Model (Martinek, 1989, 1991) suggests that children's perceptions and attributions for the treatment they receive may influence their performance during physical education classes; (2) research looking at children's perceptions of, and attributions for, their teachers' treatment of students is limited and outdated in relation to revisions to physical education curriculum and teacher training; and (3) if the performances of children with movement difficulties are influenced by their perceptions of the treatment they perceive from teachers, this could impact their participation in physical education and other physical activity settings (Bouffard et al., 1996; Chase & Dummer, 1992; Smyth & Anderson, 2000).

Martinek (1991) proposed the Teacher Expectancy Model to explain how treating children differently may influence students' performance in physical education. According to the model, teachers form expectations about students' future performance through a number of impression cues that influence the quantity and quality of the teachers' interactions with students. Children perceive the differential treatment by teachers and attribute it in a way that affects their perceived competence. Generally, children who receive preferential treatment from teachers, due to teachers' expectations that they are highly skilled physical education students, are predicted to meet these expectations and perform well. Conversely, children who teachers consider to be poorly

skilled in physical education receive unpreferential teacher treatment and will continue to perform poorly.

Perceptions of Teacher Treatment in Physical Education

According to the Teacher Expectancy Model, in order for students' performance in physical education to be influenced by differential teacher treatment, students must first perceive that teachers treat individuals with differing skill levels differently. Results from the study suggest that, on average, the participants did perceive differences in how teachers treat highly and poorly skilled children. These findings were similar to those reported in research conducted in classroom settings by Weinstein and colleagues (Brattesani et al., 1984; Middlestadt & Weinstein, 1979; Weinstein et al., 1982, 1987). All of these studies found that children perceived teachers' interactions with poorly skilled children to more often include work and rule orientations, and less frequently communicate expectations, opportunities, and choice than their interactions with highly skilled children. Teachers were perceived to more frequently allow highly skilled children freedom and choice, and less frequently exert control over their activities in physical education class. The only difference between children with movement difficulties' perceptions of teacher treatment in the present study, and the findings of earlier studies of Weinstein and his colleagues, is with respect to negative feedback and direction. Whereas previous work by Weinstein and colleagues reported that children perceived teachers to provide low achievers with negative feedback and direction more often than high achievers in the classroom, the present study found no difference in the perceived amount of negative feedback and direction offered to highly and poorly skilled

children in physical education. Overall, the results confirm that participants perceived that their physical education teachers treat highly and poorly skilled students differently.

Unexpectedly, however, the results indicated that the participants with movement difficulties did *not* think that teachers treat them like poorly skilled children in physical education. These results were surprising because the participants were recruited and selected because they *are* poorly skilled, as confirmed by the opinions of the CPASP coordinator or physiotherapists and the movement MABC scores. Why did these children not perceive themselves to be treated like poorly skilled children in physical education, despite the confirmed presence of their movement difficulties? The answer to this question may be related to the participants' ratings of their skill levels. According to the self-ratings, almost all of the participants viewed their skill level to be between that of poorly and highly skilled children. Therefore, it seems that children with movement difficulties may not have perceived themselves to be treated like poorly skilled children because they do not perceive themselves to be poorly skilled children in physical education. This leads to the following question: why not?

One possible explanation considers that participants' self-ratings may have been influenced by what they believe to be socially desirable. Elementary school-aged children are aware of the social value of athletic success. This was demonstrated in a study conducted by Chase and Dummer (1992) with 251 females and 227 males in Grades 4 to 6. They found that, on average, athletic success was ranked first among males and third among females in terms of importance for determining popularity. Given that the children in the present study likely understand the social value of athletic success, it is possible that they felt the need to appear skilled in physical education. Therefore, even though

they recognize their poor skill levels, they may have been reluctant to admit it. Instead, by rating their skill levels as average, they still appear successful at something society values without obviously exaggerating their skill level (i.e., by rating their skill level higher than average). Accordingly, it is possible that the self-ratings do not accurately reflect the participants' perceived skill levels in physical education.

A second possible explanation for the unexpectedly high perceived skill levels reported by the participants of this study is that their functional skill levels may actually be higher than that of other poorly skilled children in physical education. This is not inconceivable considering the programs the participants were recruited from, combined with the fact that the MABC measures motor abilities (rather than functional motor skills). All of the participants of the study were receiving intervention for their movement difficulties at the time of the study; six participants were involved in CPASP (i.e., an inclusive physical activity program focussed on improving motor skills) and two participants were receiving physical therapy at their schools. Therefore, it is possible that the interventions resulted in functional improvements in instructed sport or movement skills, while total scores on the MABC (i.e., a test of general motor abilities) indicated the presence of definite movement problems similar to other poorly skilled children.

A third possibility is related to participants' views of what it means to be skilled in physical education. An assumption of this study was that children focused on their ability to perform sport, game, and other physical activity skills in order to evaluate where they rated in relation to highly and poorly skilled children in physical education. Participants were, in fact, encouraged to do just that. They were asked to name a child in their physical education class who is the best at games, activities, dance and sports, and

another child who is the worst. In accordance with these instructions, participants' comments during the attribution interview indicate that they considered the performance of sport, game, and movement skills when thinking about highly and poorly skilled children. For example, when asked why the highly skilled child was *often* asked to lead activities in gym class, whereas the poorly skilled child was allowed to lead only *sometimes*, one participant responded that this was because the highly skilled child was "better at gym class" and poorly skilled child was "not as good." Another child was asked why the teacher *often* helped the poorly skilled child and he responded that it was "because he's not very good at sports." Conversely, the child indicated that the teacher *never* spent time working with the highly skilled child because he was "very good at sports." Thus, the interviews suggest that children considered ability in their meaning of skill.

However, it also became apparent through the interviews that ability was not the only factor children used to evaluate and identify high and poor skill levels in physical education. In addition to being the most athletic, highly skilled children also tried hard and behaved well in physical education. The poorly skilled children seemed to be the least athletic, but they were also described as children who rarely tried hard and often misbehaved in physical education class. Therefore, it appears that effort and behaviour were also considered as indicators of skill levels in physical education. Consider the following comments recorded during the attribution interviews: when asked why the physical education teacher *rarely* or *never* made the highly skilled children feel bad in gym class for either not answering or performing correctly, children responded that it was because "he tries too hard," "he listens," and "he just listens all the time – not being

silly." Conversely, children reported that the teacher made the poorly skilled children feel bad for not answering or performing correctly in gym class because " he doesn't try hard," "he always does silly stuff (like hit kids)," "he goofs around", and "(he's) not cooperating." Another example was evident when a child was asked why the teacher *never* ensured the highly skilled child understood an activity in physical education class. The child reported that it was "because he listens good – (only) sometimes goofs around." When asked why the teacher *always* ensured that the poorly skilled child understood an activity, this child responded that it was "because she isn't listening." Overall, participants' responses indicate that they considered skill level to be based not solely on ability, but also on effort and behaviour.

The belief that effort and behaviour contribute to skill levels suggests that participants with movement difficulties may have adopted a task involved goal perspective for their physical education classes. Task involvement refers to one of the two goal perspectives in achievement goal theory that are used to define success and competence (Ames, 1984; Nicholls, 1989). Children who are task-involved in physical education measure success and skill in terms of self-improvement, learning, and mastery of a task. They perceive effort to be closely related (or even the same as) ability. Therefore, trying hard means learning, which indicates higher ability. The other goal perspective described in achievement goal theory is ego involvement. Children who are ego-involved define competence and success in terms of normative comparisons (i.e., "being the best"), rather than "trying your best." They view effort and ability as differentiated concepts, meaning that trying hard is seen to improve performance only within the limits of one's ability (Nicholls, 1989).

The use of a task-involved goal perspective may explain why children with movement difficulties perceived highly skilled children to be those who are the most athletic and also who try hard and behave well in physical education. It may also be the reason why the poorly skilled children were perceived as the least athletic children who rarely try hard and misbehave in physical education class. Most importantly, it may explain why the current study participants perceived their own skill levels as between that of poorly and highly skilled children. If the participants defined success in terms of ability, effort, *and* behaviour, then beliefs that they exhibit maximal effort and listen to their teachers may have resulted in perceptions of average skill levels, irrespective of their movement difficulties.

The adoption of a task-involved goal perspective would have been facilitated by the motivational climates of the intervention programs the participants attended (Ames, 1984; Ferrer-Caja & Weiss, 2000; Mitchell, 1996; Papaioannou, 1995). According to achievement goal theory (Nicholls, 1989), the motivational climate of a program is determined by the content and use of instructions, rewards, and expectations, as well as the types of goals that are emphasized. When the importance of learning, problem solving, and developing new skills is emphasized, individuals are likely to adopt a task-involved goal perspective. Evaluation and rewards are based on personal improvement, and effort is praised and encouraged. In contrast, when the focus is on social comparison, and the demonstration of superior normative ability is valued, an ego-involved perspective is encouraged. Intervention programs such as CPASP, which many of the participants were involved in, are intended to promote a mastery climate. The program is designed to focus on individual improvement and skill development within the children's

ability, and de-emphasize normative skill development and social comparison. Children are encouraged to "be their best" rather than "be the best." Exposure to this motivational climate may have contributed to the development of a dispositional tendency toward task-involvement in physical activity (Nicholls, 1989). It could also be argued, of course, that children with movement difficulties adopted a task involved goal perspective due to the motivational climates created in their physical education classes (Causgrove Dunn, 2000; Mitchell, 1996; Papaioannou, 1995). Based on the recent revisions to the physical education curriculum in Alberta, the participants should also be exposed to task-involved motivational climates in their physical education classes. The goal of the revised curriculum is for children to "develop the knowledge, skills and attitudes necessary to lead an active, healthy lifestyle" (Alberta Learning, 2000, p.5). However, while this aim does emphasize a task-involved climate, it does not explain why children with movement difficulties perceived poorly skilled children to behave poorer and exhibit less effort than themselves (despite being in the same goal structured environment). Stated differently, whereas children with movement difficulties appear to value effort, behaviour and ability, poorly skilled children are perceived to only value ability.

Attributions for Perceived Teacher Treatment

Children with movement difficulties perceived differences in the preferential and unpreferential treatment highly and poorly skilled children received from teachers. Before continuing, it should be understood that preferential and unpreferential treatment are considered from the participants' (rather than teachers') perspectives. Teachers may behave in a manner that is intended to benefit the children; however the children may still interpret the behaviour negatively. Stated differently, some treatment perceived as

unpreferential treatment from the children's perspective is simultaneously considered "good teaching". An example of this is helping children. Teachers help children with the children's best intentions in mind — to improve and correct their skills. However, help, especially unsolicited help, can be interpreted by children as a low ability cue (Barker & Graham, 1987) and consequently can decrease perceived competence. Teachers should be aware that the intentions of their actions may be in the children's best interests, but the effect on the children may actually be different than intended. Therefore, when reading the following part of the discussion, the reader should keep in mind that preferential and unpreferential treatment refer to the perspectives of children, and do not consider the intention of teachers or good teaching practices.

Children with movement difficulties perceived highly skilled children to receive more preferential than unpreferential teacher treatment, and the opposite pattern of teacher treatment for poorly skilled children. As indicated earlier, these results are not surprising and are supported by other research showing high achievers to receive more preferential treatment than low achievers from teachers in physical education (Martinek, 1981a, Martinek & Johnson, 1979; Martinek & Karper, 1984; Portman, 1995). According to the Teacher Expectancy Model, whether the children's performance in physical education is influenced by perceptions of differential teacher treatment depends on whether their attributions for the perceived differences in treatment influences their perceived competence (Martinek, 1989, 1991). In other words for the performance of poorly skilled children to be negatively influenced by their perceptions of differential treatment, they must attribute the differential treatment to their low ability. For the

performance of highly skilled children to be positively influenced they must attribute the perceptive differential treatment to their high ability.

The results of the study illustrated that preferential treatment perceived to be directed toward highly skilled children was attributed most often to their ability, while the unpreferential treatment was attributed primarily to the teacher. In contrast, attributions for the unpreferential treatment that the poorly skilled children were perceived to receive were most often to qualities of the poorly skilled children (ability, self). Perceived preferential treatment for the poorly skilled children was mostly attributed to either the teacher or self; little of the perceived preferential treatment was attributed to ability.

If Weiner's (1986) attribution theory is applied to patterns of attributions children with movement difficulties made for the treatment highly and poorly skilled were reported to receive, it would suggest that the participants are attributing differential treatment in a manner that is consistent with the Pygmalion effect. In other words, if the participants attribute teacher behaviours they perceive as directed toward them in a similar manner, their behaviours might be affected as suggested by Martinek (1991). If, for example, the participants perceive mostly preferential treatment from teachers (due to teachers' beliefs that they are highly skilled), and they attribute these teacher behaviours in a similar manner to their attributions for the perceived treatment of highly skilled children in this study, then participants' perceived competence and performance are likely to be positively influenced. This is because children who believe they can do well, are more likely to be motivated to participate and practice hard in physical education class (Nicholls, 1989). In doing so, they are likely to improve their performance in physical education class (Martinek, 1989; Nicholls, 1989). If, on the other hand, they

perceive they receive primarily unpreferential treatment (due to teachers' beliefs they are poorly skilled), and they attribute this behaviour as they have done so for the poorly skilled children in this study, then negative affective and behavioural outcomes are predicted. Attributing failure to ability instills a state of hopelessness which forces children to doubt their own ability and adopt the attitude of "why try when it really doesn't matter" (Ames, 1984; Nicholls, 1989; Weiner, 1986). Failing to attribute preferential treatment to ability would only further convince these children that they have no control over their success (Weiner, 1986).

It was expected that the participants of this study would perceive that they are treated like poorly skilled children in physical education, due to their movement difficulties. However, this was not the case. Children with movement difficulties perceived themselves to receive more preferential than unpreferential treatment from their teachers. Most of the preferential treatment they perceived was attributed almost equally to personal qualities (e.g., self, ability) and the teacher. Most of the unpreferential treatment they perceived was believed to be due to the teacher. They felt personally responsible (e.g., ability, self) for very few of the perceived unpreferential behaviors. Overall, the participants made more attributions to ability for the preferential rather than unpreferential treatment they perceived.

The results suggest that the perceptions of competence of the participants are likely to be positively influenced by the treatment they received from their teachers (Weiner, 1986). These children appeared to feel that the preferential treatment teachers provide them is a reward for their ability, how hard they tried, and their behavior in physical education class. They did not feel they were highly responsible for the

unpreferential treatment they perceived, but that this was because of their teachers' characteristics, which are beyond their control. The high number of preferential behaviors thought to be due to the teacher is not believed to influence perceived competence because many represent instructional strategies that were perceived to be similar between target children. Therefore, based on the results there appears to be no cause for concern that participants' performance in physical education may be negatively influenced by perceived differential treatment by teachers.

However, as a caution, recall that one possible reason why participants may not have perceived themselves to be like the poorly skilled children was that they responded to the skill level assessment and TTIs in a way that appears socially desirable. In this case, the ratings would not be an accurate representation of their perceived skill level. Therefore, they may actually perceive themselves to be the poorly skilled children who are treated accordingly by teachers in physical education. These results may even have gone undetected due to the low power. In this case it is possible that the perceived differential treatment could negatively influence performance in physical education.

Conclusion

The study partially supports the initial predictions for children with movement difficulties, based on the Teacher Expectancy Model. As expected, participants perceived differential teacher treatment of highly and poorly skilled children. Surprisingly however, children with movement difficulties did not perceive themselves to be treated as poorly skilled children, and the attributions they made for perceived teacher behaviours are likely to enhance their perceived competence. Based on these findings, predictions based in the Teacher Expectancy Model suggest that the performances of the participants with

movement difficulties in physical education would be positively influenced. According to the model, this alleviates any concern that the performance of children with movement difficulties is being negatively influenced by their perc-eptions of treatment, and suggests that their performance may benefit from the differential treatment.

Recommendations

Considering that support for the application of the Teacher Expectancy Model to children with movement difficulties in physical education was found, teachers should be aware that they can affect whether children's performances in physical education are likely positively or negatively influenced. Teachers can influence children's performances in physical education by structuring the motivational climate of the class. If teachers structure the content, use of instructions, rewards, expectations, and the goals to emphasize learning, problem solving, and skill development, and well as base their evaluations and rewards on personal improvement and effort, students are likely to adopt task-involved goal perspectives. Adopting task-involved goal perspectives allows children to define success in terms of self-improvement, learning, and mastery of a task. It also allows participants to define skill in terms of ability, effort, *and* behaviour, rather than as normative ability. Doing so, allows all children, even those with movement difficulties, to experience success. This, in turn, positively influences performance in physical education.

Also considering that support for the application of the Teacher Expectancy Model to children with movement difficulties in physical education was found, future research into children's perceptions of and attributions for differential teacher treatment is warranted. However, future research should consider the following recommendations

based on limitation of the present study. First, the sample was not representative of the population of children in Grades 3 – 6 with movement difficulties. All of the participants were receiving motor skill interventions at the time of the study, which may have influenced their perceived and actual skill levels, goals and motivation, as well as the treatment they received from teachers. Thus, the perceptions reported by the study participants may not represent those of children with movement difficulties who do not receive specialized intervention. The perceptions and treatment of those children may be more similar to those perceived for poorly skilled children in this study. If so, the results found raise some concern that the performance of poorly skilled children and children with movement difficulties not receiving intervention may be negatively influence by their perceptions of differential teacher treatment. In future work, a more representative sample should be selected. Also related to the sample, a larger number of participants should be included in future research. The moderate or large effect sizes for differences in perceived teacher treatment toward self and poorly skilled children on the negative feedback and direction, and the expectations, opportunities and choice subscales suggest that significant differences may be detected with a larger sample (i.e., more power).

A second area of limitation of this study was that the measured perceptions may be subject to social desirability. Because of this, it is unclear whether children's ratings of their skill levels accurately represent their perceived skill level or if they represent what they children perceive as socially acceptable. Perceptions may also vary somewhat from class to class. Thus, it is recommended that future studies assess children's perceptions more than once.

The third area of limitation was the length of the inventories used. Due to the length of the TTI, children were unable to maintain their focus throughout the inventories despite increasing the number of breaks. It is recommended that a shorter inventory be created that specifically applies to physical education. This would likely have a positive impact on the collection of attribution data too. Children had difficulty trying to explain why their teacher behaved a specific way in the attribution interviews and responded with "Don't know" many times despite probing. Much of the difficulty was related to the length of the inventory, as children had a tendency to use this response as their attention decreased towards the end of the inventory.

Finally, it would be useful to repeat this study with highly and poorly skilled participants to complete the inventory, rather than having children with movement difficulties perceive the treatment hypothetical highly and poorly skilled children receive from their teachers. Although this study provides preliminary support for the application of the Teacher Expectancy Model to highly and poorly skilled children, repeating the study as described above would give a better indication of whether their perceptions of differential treatment may influence their performance in physical education.

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Appendix A

Invitation Letter

Invitation Letter

Dear Parent or Guardian:

My name is Elisa Hoogendoorn. I am a graduate student in the Faculty of Physical Education & Recreation at the University of Alberta. The purpose of this letter is to inform you of a study I am conducting for my graduate thesis.

The title of my thesis is "Do Children Think Their Teacher Treats Students in Physical Education Differently? The purpose of the study is to find out (1) whether children think their teachers treat students differently depending on their athletic skill level, and (2) why they think this happens.

If you are interested in learning more about this study, please contact myself (Elisa Hoogendoorn) either by telephone (466-9331) or email (elisah@ualberta.ca). You may also contact my supervisor (Dr. Janice Causgrove Dunn) at 492-0580 for information on the study. If you have concerns about this study, you can contact Dr. Wendy Rodgers (Associate Dean of Research in the Faculty of Physical Education & Recreation) at 492-5910. Dr. Rodgers has no direct involvement with this project.

Thank you for considering taking part in this study.

Sincerely,

Elisa Hoogendoorn

Appendix B

Parent Information Letter

Parent Information Letter

Title of Project: Do Children Think Their Teacher Treats Students in Physical Education Differently?

Investigator: Elisa Hoogendoorn, Graduate Student, Physical Education & Recreation, 466-9331, elisah@ualberta.ca

Supervisor: Janice Causgrove Dunn, PhD, Physical Education & Recreation, 492-0580

Dear Parent or Guardian:

My name is Elisa Hoogendoorn. I am a graduate student in the Faculty of Physical Education & Recreation at the University of Alberta. The purpose of this letter is to ask permission for your child to take part in a study I am conducting for my graduate thesis. Details of the study are provided below.

Purpose: The purpose of the study is to find out (1) whether children think their teachers treat students differently depending on their athletic skill level, and (2) why they think this happens.

What I will need from you and your child: I will need to know more about your child's movement abilities. I will also need to find out how your child thinks the physical education teacher treats students during class. To get the information I need, I will ask your child to participate in two sessions in the Adapted Physical Activity Lab, at the University of Alberta.

Session 1: In the lab, your child will be asked to complete a motor ability test called the Movement Assessment Battery for Children. The test takes about 30 minutes to complete. It includes activities such as throwing and catching a ball, balancing, and cutting with scissors. If your child receives a score within the cut-off range, your child will be asked to complete two interviews.

After the motor ability test, I will help your child fill out a questionnaire. It asks your child how he or she thinks the teacher treats students in physical education class. Your child will also be asked why he or she thinks the teacher treats students this way. We will talk specifically about the teacher's treatment towards either your child, the most athletic child, or the least athletic child in the class. The questionnaire and talk will take about 15 - 20 minutes. In total, this first session will take about 50 minutes.

Session 2: Again at the lab, I will talk to your child some more about how his or her physical education teacher treats students in the class. I will help your child to fill out the questionnaire again. This time we will talk about the two children that we did not talk

about during the first session. The two children will be either your child, the most athletic child, or the least athletic child in the class. We will also talk about why your child thinks his or her teacher acts this way. Session 2 will take no more than 45 minutes to complete.

Costs and Benefits: There are no costs for this program except your time. Any time your child comes to the university, I will pay for parking. Your child will be supervised at all times during the two sessions. The risk of physical injury during the movement ability test is no greater than during recess or gym class. Risks are small as long as data about your child's physical ability is handled properly. The possibility that your child will become upset or worried about his or her inability to do any of the tasks is very low. This is because I will provide praise for effort. I will also modify the tasks to ensure that every child is successful. If for any reason, your child appears upset while discussing their teacher's behaviour, we will move on to the next question. We will stop the interview entirely if your child wishes to do so. The knowledge I gain from this study will help me figure out if teachers can affect the performance of children. This information will be of interest to both teachers and researchers interested in helping children to successfully take part in physical education.

Confidentiality: All the information I gather about your child is confidential except when codes of ethics or the law requires reporting. I will store all materials in a locked storage cabinet behind a locked door in the graduate carrel area in the Faculty of Physical Education and Recreation, or in the faculty's Adapted Physical Activity Laboratory. As required by university policy information will be retained for five years, after which it will be destroyed. Your name or any other identifying information will not be attached to the information your child gives. Only I and my supervisor will have access to the information. I will not publish any information that could identify your child or your family. If I look at the information I collect again in the future or plan on doing a secondary analysis, I will get the appropriate ethics approval first. Your child can be assured that anything we talk about will not be repeated to their teacher, parents or peers. To help ensure this, please do not identify the teacher or peers by name. The only information that will be shared is your child's score on the motor ability test with only you for your use.

Free to withdraw: You or your child are free to refuse to take part in this study. Your child is free to refuse to do any activities or answer any questions. If you decide to take part, you are free to withdraw your child at any time. To withdraw from the study, please inform me (Elisa Hoogendoorn) either by phone, email or in person. Upon your request, your child's information will be removed from the study.

Additional Contact: If you have any questions about the study, please contact me (Elisa Hoogendoorn) by e-mail at elisah@ualberta.ca or by telephone at 466-9331. You may also contact my supervisor (Dr. Janice Causgrove Dunn) at 492-0580 for information on the study. If you have concerns about this study, you can contact Dr. Wendy Rodgers (Associate Dean of Research in the Faculty of Physical Education & Recreation) at 492-5910. Dr. Rodgers has no direct involvement with this project.

If you and your child are willing to participate in the study, please complete the consent forms and questionnaire included in this package and return them to me. Once I receive these forms, I will contact you to make arrangements for your child's participation in the two sessions.

Thank you for considering taking part in this study.

Sincerely,

Elisa Hoogendoorn
Graduate Student

Janice Causgrove Dunn, PhD
Associate Professor

Appendix C

Child Information Letter

INFORMATION LETTER FOR KIDS

This study is to find out how teachers treat kids in gym class.

One day you will play some games. Games might be throwing and catching a ball, drawing, or cutting out pictures. This will take about 30 minutes.

Try your best on the games. I will tell your parents your scores on the games. If the games are too hard, do not get upset. We will make the games easier.

After this, I might ask you some questions. We might talk about how you think your teacher treats you in gym class. We might talk about how you think your teacher treats the best kid in gym class. We could also talk about how your teacher treats the worst kid in gym class. I will also ask you why you think this happens. No answer is right or wrong. This will take about 20 minutes.

I will ask you to come back on another day. Again, we will talk some more about how your teacher treats you or other kids in gym class we did not talk about on the first day. This will take about 45 minutes. We will take a break so you can play for 5 minutes.

When we talk about gym class, please do not tell me the names of your teacher or kids in your gym class.

I promise you that I will not tell anyone what you say to me about gym class. I will pinky swear with you that no one will find out.

You can ask me questions about the study anytime. You do not have to play a game or answer any questions you do not want to. You can tell me you want to stop playing the games or answering questions anytime.

Please sign your name below if you want to be in the study.

_____	_____	_____
Signature of Child	Signature of Researcher	Date

Appendix D

Parent Consent Form

Parent Consent Form

Title of Project: Do Children Think Their Teacher Treats Students in Physical Education Differently?

Investigator: Elisa Hoogendoorn, Graduate Student, Physical Education & Recreation, 466-9331, elisah@ualberta.ca

Supervisor: Janice Causgrove Dunn, PhD, Physical Education & Recreation, 492-0580

1. Do you understand that your child has been asked to be in a research study?	Yes	No
2. Have you read and received a copy of the attached Information Letter?	Yes	No
3. Do you understand the benefits and risks involved in taking part in this research study?	Yes	No
4. Have you had an opportunity to ask questions and discuss the study?	Yes	No
5. Do you understand that you or your child are free to refuse to participate or withdraw from the study at any time without consequence?	Yes	No
6. Do you understand that the information collected from your child during this study will remain confidential? Do you understand who will have access to your child's records?	Yes	No

This study was explained to me by: _____

I agree to allow my child to participate in this study.

_____	_____	_____
Signature of Parent or Guardian	Date	Witness
_____	_____	_____
Printed Name of Parent or Guardian	Phone Number	Printed Name of Witness

I believe that the person signing this form understands what is involved in the study and voluntarily agrees to participate.

_____	_____
Signature of Investigator	Date

Appendix E

Child Consent Form

Kids Consent Form

1. Do you know that you have been asked to be in a study?	Yes	No
2. Did you read the Kids Information Letter?	Yes	No
3. Do you know I will make games easier if they are too hard?	Yes	No
4. Have you asked questions about what you are going to be doing?	Yes	No
5. Do you know that you do not have to be in the study?	Yes	No
6. Do you know you can stop playing the games at anytime?	Yes	No
7. Do you know you can stop answering questions at anytime?	Yes	No
7. Do you know that I will tell your parents your game scores?	Yes	No
8. Do you know that I will not tell anyone what you say about gym class?	Yes	No

This study was explained to me by: _____

I want to be in the study _____

Name of Child

I believe the child signing this form understands what is involved in the study and voluntarily agrees to participate.

_____ _____

Signature of Investigator Date

Appendix F

Child Information Questionnaire

Child Information Questionnaire

Child's Name: _____ Sex: M ___ F ___ Age:_____ Grade: _____

What is the name of the school your child attends? _____

Has your child participated regularly in a physical education class at school since fall 2002? By regularly it is meant that your child is usually in attendance at his or hers physical education class unless for extenuating circumstances such as illness or vacation.

Yes _____ No _____

How frequently (times per week) does your child's class participate in physical education class?

_____

What is the typical duration (in minutes) of your child's physical education class?

_____

Does your child currently receive additional support such as a teaching aid in physical education class? If so, please specify the type of support your child receives and how often. Yes _____ No _____

_____

Does your child have any disabilities (i.e., developmental coordination disorder, ADHD, learning disabilities, autism, Asberger's syndrome, intellectual delays, cerebral palsy, motor planning problems, visual impairments, sensory impairments)? If so, please specify.

Yes ____ No ___

_____

Does your child currently have an acute injury or acute condition that may affect his or hers ability to perform in physical education class? If yes, please specify. Yes __ No __

_____

Please indicate by putting an "X" on the line below, how you rank in your physical education class compared to the most highly skilled and poorly skilled students.

Most highly skilled _____ Most poorly skilled

Appendix G

Teacher Treatment Inventory

Teacher Treatment Inventory

(Weinstein et al., 1987)

Highly Skilled_____ Poorly Skilled _____ Self _____

Highly Skilled: Think of someone in your gym class who always wins and does the best in your gym class and who everyone thinks is really good at sports, dance and games. Can you name and describe this person for me? Why do you think this person is the best in gym class?

Poorly Skiiled: Think of someone in your gym class who always loses and does not do very well in your gym class and who everyone thinks is not very good at sports, dance and games athletics. Can you name and describe this person for me? Why do you think this person is not very good at sports in your gym class?

Self: Close your eyes and image that you are in your gym class right now. Think about some of the games that you play in gym class. What are your favorite activities and games? What activities and games would you rather not play? Can you tell me about them? Think about the activities and games that you play really well. Can you tell me about them? Think about the activities and games you have trouble with. Can you tell me about them?

Scale 1: Negative Teacher Treatment and Teacher Direction

Now can you tell me how often your gym teacher... Can you tell me why your teacher...

	Always	Often	Sometimes	Never
1. Decides how ___ spends time in gym class?	○	○	○	○
2. Tells ___ to practice a skill at home?	○	○	○	○
3. Makes ___ feel bad when ___ cannot perform an activity right or makes a mistake in a game?	○	○	○	○
4. When ___ has to practice with another student, the gym teacher tells ___ who to practice with?	○	○	○	○
5. Scolds ___ for not trying?	○	○	○	○
6. Scolds ___ for not listening?	○	○	○	○
7. Chooses the equipment ___ will use in activities?	○	○	○	○
8. Makes ___ feel ___ have not performed an activity or played well in a game?	○	○	○	○
9. Tells ___ to stop before ___ have a chance to finish practicing a skill or ___ get to play in a game?	○	○	○	○
10. Watches ___ closely while ___ are practicing a skill or playing in a game?	○	○	○	○

Scale 2: Work and Rule Orientation

Now can you tell me how often your gym teacher...

Can you tell me why your teacher...

	Always	Often	Sometimes	Never
1. When ___ is practicing a skill or playing in a game, the gym teacher tells ___ what to do?	○	○	○	○
2. Asks ___ if ___ understand how to do the activity, drill or play the game?	○	○	○	○
3. When ___ performs the skill wrong during an activity, makes a mistake during a game or plays the game wrong, the gym teacher tells ___ how to perform the skill or play in the game the right way?	○	○	○	○
4. Expects or thinks ___ will stick to practicing the activity ___ is working on?	○	○	○	○
5. Thinks it is more important for ___ to learn the skill and learn how to play the game than to have fun?	○	○	○	○
6. Explains the rules of the games to ___?	○	○	○	○
7. Asks other students to help ___?	○	○	○	○
8. Punishes ___ if ___ breaks the rules of gym class?	○	○	○	○
9. When ___demonstrates a skill wrong, the gym teacher calls on someone else to demonstrate?	○	○	○	○
10. Spends more time working with ___ in gym class?	○	○	○	○

Scale 3: High Expectations, Opportunity and Choice

Now can you tell me how often your gym teacher...

Can you tell me why your teacher...

	Always	Often	Sometimes	Never
1. Teacher calls on ___ to answer questions or demonstrate skills or activities in gym class?	○	○	○	○
2. Asks ___ to lead activities in gym class?	○	○	○	○
3. Makes ___ feel good about how hard ___ tries in gym class?	○	○	○	○
4. Calls on ___ to explain things or demonstrate a skill in gym class?	○	○	○	○
5. Trusts ___ in gym class?	○	○	○	○
6. Lets ___ make up ___ own activities and games in gym class?	○	○	○	○
7. Is interested in ___?	○	○	○	○
8. Lets ___ do as ___ likes in gym class as long as ___ finishes the activity ___ are told to do?	○	○	○	○
9. Makes ___ feel ___ did very well when ___ give the right answer or demonstrate a skill or activity correctly in gym class?	○	○	○	○
10. ___ is given special privileges in gym class. ___ gets to do special things in gym class?	○	○	○	○